

ICES Annual Report

for

2000

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

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FOREWORD TO THE ANNUAL REPORT, 1999-2000

As required by the Rule 15 of the Rules of Procedure of the International Council for the Exploration of the Sea, I have the honour to present the ICES Annual Report for 1999/2000, which outlines the Council's activities between 1 November 1999 and 31 December 2000 and incorporates the Proceedings of the 2000 Annual Science Conference (88th Statutory Meeting) held in Brugge (Bruges), Belgium.

Highlights of 1999/2000

1. *The Draft Strategic Plan*

The draft Strategic Plan, which the Delegates had adopted at the 1999 Statutory Meeting in Stockholm, was launched in London in February 2000 during the Follow-up Dialogue Meeting (see below). The national consultations that ensued during the course of the year generated considerable feedback on the draft Strategic Plan. The comments and criticisms, all of which were constructive, were presented and discussed at a specially convened Open Forum that was held in Brugge (Bruges), Belgium on 26 September, just before the opening of the Annual Science Conference. Speakers representing government ministries, partner commissions of ICES (environmental as well as fisheries), the fishing industry and intergovernmental scientific organisations contributed actively, as did various elected officers of ICES. The draft Strategic Plan will be revised and circulated to Delegates early in 2001, for further national consultations and feedback by early April. The intention is to present a final draft to the Delegates for their endorsement in September. For details, please see the *Report of Delegates Meeting, Agenda Item 17* in Part II, pages 163–169).

2. *Follow-up Dialogue Meeting, London*

Consequent upon the successful Dialogue Meeting held in Nantes in January 1999 on the *Relationship Between Scientific Advice and Management*, ICES organised a Follow-up Dialogue Meeting. This took place in London on 8 February. The participation included representatives from ICES' partner fisheries commissions, government ministries and national marine research institutes. Key aspects of the ICES advisory procedures were reviewed, particularly the way in which the precautionary approach had been incorporated into the work of the Advisory Committee on Fisheries Management (ACFM). The report of the Follow-up Dialogue Meeting was presented as Document CM 2000/Del:20; the Council's discussion is summarised in the *Report of Delegates Meeting, Agenda Item 24* (Part II, pages 178–180).

3. *Environment Dialogue Meeting, Bonn*

Hitherto, the successful ICES format of Dialogue Meetings has been applied only in relation to fisheries issues. Recognising that a Dialogue Meeting between

scientists and environmental managers was overdue, ICES organised the 12th (Environmental) Dialogue Meeting. At the kind invitation of the Government of Germany, the meeting was held in Bonn, 7–8 September. Participants came from ministries, agencies and scientific research institutes of the ICES Member Countries' governments and from the European Commission (DG-Environment). Office holders in the committee structure of ICES' two environmental partner commissions, OSPAR and HELCOM, played active roles as Chairs, speakers or rapporteurs. A preliminary report was tabled at the Statutory Meeting as Document CM2000/Del:18; the final version will be published in the ICES Cooperative Report series. The Delegates' discussions are summarised in the *Report of Delegates Meeting, Agenda Item 25* (Part II, page 180).

4. *Reorganising the ICES Advisory Process and Structures*

The Council endorsed the proposals put forward by the Bureau Working Group on the Advisory Process (Document CM 2000/Del:10) for new structures and procedures. Having identified five key issues and problems affecting the ICES advisory process (workload, management of the advisory process, integration of complex interdisciplinary matters, flexibility and quality control), the Bureau Working Group proposed the addition of a third advisory committee, the Advisory Committee on Ecosystems (ACE) to stand alongside the Advisory Committee on Fisheries Management (ACFM) and the Advisory Committee on the Marine Environment (ACME). In addition, a Management Committee for the Advisory Process (MCAP) was proposed, which will have an overarching management role in relation to ACFM, ACME and ACE. The Council's discussion of these and related matters is given in the *Report of Delegates Meeting, Agenda Items 6-8*. Information concerning membership of, and terms of reference for these committees, as well as the changes in the Rules of Procedure necessary to implement the Council's decisions in this regard, may be found in the *Resolutions Adopted at the 2000 ICES Annual Science Conference (88th Statutory Meeting), C.Res. 2000/4DEL01* (Part II, pages 214–216).

Forthcoming Annual Science Conferences

By the kind invitation of the Government of Norway, the 2001 ASC (89th Statutory meeting) will be held from [DATES] in Oslo, at the [VENUE]. This event will mark the 100th anniversary of the ICES Preparatory Meeting in Christiania (as Oslo was then called), in 1901.

The 2002 ASC (90th Statutory Meeting) will take place in Copenhagen, Denmark, [DATES], to mark the centenary of the founding of ICES. The Government of Denmark has kindly undertaken to organise appropriate events in recognition of this auspicious occasion.

PART I
ANNUAL SCIENCE CONFERENCE

**AGENDA FOR COUNCIL: 2000 ICES ANNUAL SCIENCE CONFERENCE
(88TH STATUTORY MEETING)**

GENERAL ASSEMBLY AGENDA

1. **General Secretary:** Call to Order and Welcome
2. **President:** Opening Address
3. **Minister of Agriculture and Small & Medium-Sized Enterprises, Mr J. Gabriëls:** Address to the General Assembly
4. **Minister for Economy and Scientific Research, Mr C. Picqué:** Address to the General Assembly
5. **Musical Interlude**
6. **Roger Harris:** Presentation of the ICES Zooplankton Methodology Manual
7. **Daniel Pauly:** Open Lecture “*Fisheries and Conservation. A Programme for their Reconciliation*”

GENERAL ASSEMBLY

Congress Centre Oud Sint-Jan, Brugge (Bruges) Belgium
27 September 2000

The **General Secretary, David Griffith**, called the General Assembly for the 2000 ICES Annual Science Conference (88th Statutory Meeting) to order at 09.00.

The **President of ICES, Scott Parsons**, addressed the meeting:

Honourable Ministers, distinguished guests and dear colleagues.

Goede morgen iedereen, welkom in Brugge, “Het venetie van het noorden”, bij aanvang van de 2000 ICES Annual Science Conference.

Good morning everyone, welcome to Brugge, “The Venice of the North”, at the start of the 2000 ICES Annual Science Conference.

It was with great pleasure that we received the invitation from the government of Belgium to hold the 2000 ICES Annual Science Conference and 88th Statutory Meeting here in the beautiful city of Brugge.

On behalf of participants in this Annual Science Conference, I would like to express our appreciation to the government of Belgium for inviting ICES to meet here in the year 2000. This is indeed an historic occasion as it marks the first time that the ASC/Statutory Meeting has been held in Belgium.

Belgium’s involvement with ICES dates back essentially to the beginning of ICES. Belgium was represented at the second preparatory conference in Kristiana (Oslo) in 1901. Although it was not represented at the first formal meeting in Copenhagen in 1902, it was formally represented by officially nominated delegates for the first time at the Council Meeting in 1904.

Over the years, Belgium has been quite active in the work of the Council. Gustave Gilson, Director of the Royal Natural History Museum in Brussels, who was the Belgian pioneer of oceanography, was closely involved in the early initiatives for international collaboration within ICES. E. Leloup, Director after the second World War of a laboratory in Ostende, was a Vice President on the Bureau (the executive committee of the Council) from 1954–1959 and again from 1965–1968. The former Director of the Ostende laboratory, Pierre Hovart, now deceased, served with me as a Vice President on the Bureau Committee of ICES when I first served as a Vice President in the early 1990s. And of course, our dear colleague, Rudy de Clerck, current Director of the Fisheries Research Station in Ostende, who was instrumental in arranging this historic meeting here in Belgium, served for a long time as a member of the Advisory Committee on Fisheries Management (ACFM).

He has been a member, and Chair of several ICES Working and Study Groups.

We are especially pleased that this meeting is being held here in the historic and beautiful city of Brugge. Founded between the 7th and 9th centuries, Brugge has been described as a “Mediaeval city of stunning beauty and charm”. Belgium itself has been described as “Europe in a nutshell, multicultural and multilingual” and hence, appropriately, Brussels is the location of the European Parliament, Council, and the Commission.

We are honoured to have with us today a minister of the Belgian Government, the honourable Mr J. Gabriëls, Minister of Agriculture and Small and Medium-Sized Enterprises. Unfortunately, Mr C. Picqué, the Minister for Economy and Scientific Research, is unable to participate.

We also have with us our two Belgian Delegates to ICES Rudy de Clerck, whom I mentioned earlier, and Georges Pichot who is the new Belgian Delegate. He is in charge of the management unit of Mathematical Models of the North Sea with the Belgian Royal Institute of Natural Science.

At this meeting here in Belgium, we are examining the challenges and opportunities ICES faces as it enters its second century, and discussing the future directions for ICES. Yesterday we held here an Open Forum on the initial ICES strategic plan, inviting views and suggestions from ICES Member Countries, customers for ICES advice, existing and potential partner organizations and other stakeholders. I will have more to say about that later. Before doing so, I would now like to invite our distinguished ministerial guest to address the General Assembly.

I would like to call upon the honourable Jaak Gabriëls, Minister of Agriculture and Small and Medium-Sized Enterprises.

Please join me in welcoming Minister Gabriëls.

J. Gabriëls addressed the Assembly as follows:

Mr President, esteemed Delegates, members of ICES, participants to the Annual Science Conference of ICES here in Bruges – I wish all of you very welcome, also in the name of my colleague Minister Picqué, responsible for Economy and Scientific Research, who unfortunately cannot take part in this ceremony.

ICES was founded in 1902 and it is indeed quite exceptional that an intergovernmental scientific council has reached such an old age that a centenary can be celebrated. It must be said that already in 1903 Belgium

became a member of ICES. So, almost from the beginning my country was involved in the ICES activities, which we are proud of. And now, after all these years of membership I'm honoured to welcome the entire ICES family for its yearly congress. I would like to thank all the persons who have worked very hard to make this possible, for their dedication and their efforts.

Belgium has a long, but modest tradition in marine science. Already in the middle of the 18th Century a Belgian publication was made in the field of marine biology. Later on there were activities in this field from scientists such as the Professors Van Beneden and Gilson. They were indeed pioneers in this field. In between there was a memorable Belgian expedition of Antarctic explorers on the sailing vessel "Belgica" in 1897, and further Arctic voyages took place in the Greenland Sea and the Barents Sea. The famous Belgian commander was Adrian de Gerlache and he was working with an international team of Polish, Norwegian, Romanian, and American scientists. Amongst those on board were well known scientists such as Amundsen, Cook, and Lecointe.

In 1926 the First "International Conference of the Ocean" was held in Ostende. One year later the "Institute for Marine Sciences" was founded. Over a period of more than 30 years it was mainly occupied in research into the science and statistics of fisheries. From the early 60's onwards, its task was taken over by my services, the Sea Fisheries Department of the Centre of Agriculture Research.

From the early 70's, the Federal Government started to support marine research by means of multiannual scientific research programmes in order to develop and maintain the necessary scientific expertise in this important domain. The operational direction of these research programmes is the responsibility of the Office for Scientific, Technical and Cultural Affairs. Earlier this year, the Council of Ministers approved a new multiannual scientific research plan, namely, the Second Scientific Support Plan for a Sustainable Development Policy, which will, amongst other disciplines, provide the necessary support for marine sciences.

Since my nomination as Minister of Agriculture I have been involved in fisheries and in fishery management. My first contact with this complex world was the European Council consultations in 1999 for fixing the 2000 TAC's. I really felt myself like a young fish swimming in the big sea, experiencing a whole new challenge. New terms like total allowable catch, precautionary approach, technical measures, closed seasons and closed areas came into my dictionary.

At the same time I asked myself if these problems were old histories or just recent problems. Therefore I took note of the so-called "Procès-verbal" of ICES during their first meeting in 1902. In this document it was already stated that, and I quote, "the Committee recommends to undertake at once the investigations on the question of over-fishing in parts of the North Sea,

Skagerrak and Kattegat, with special regard to the plaice, the sole and other flatfish, and the haddock". I pointed out that the health of these fish stocks are nowadays still problematic – I mean almost 100 years later – and that the "cohabitation" of research and consequent management is still a major item for concern.

Looking into the Flemish history I found out that the actual need for fishery management is not new at all. For many centuries fishing was very important along the Flanders coast in the Southern Bight of the fertile North Sea. I like to mention some milestones, which will indicate that even in fisheries matters "l'histoire se répète" or "history will repeat itself".

Starting in the year 932 St. Peter's Abbey (near Boulogne) received from the Earl the privilege of fishing with seines on the beaches off Boulogne. Almost a millennium ago, there existed already some rules as regards the use of specific nets.

In 1291 Philip le Beau prohibited nets having meshes which were smaller than a silver coin in use at that time, the so-called "gros tournois". In 1326 Charles IV again enforced this law. So mesh size regulations date already from the 13th Century.

At the end of the 14th century several measures were published for coastal fishing. In 1393 Philip the Bald promulgated an ordinance from which it can be deducted that many fishermen along the Belgian coast between Sluis and Grevelingen were using fixed gears. Coastal management, a very popular item nowadays, was created at that time of history. The reason for this was the fear that the future of the coastal fishery was in danger.

During the first half of the 15th century, other regulations were enforced regarding the locations where nets could be erected on the beach and where not. These were a definite precursor of the so-called "closed areas" which are now in use.

Later on at the end of the 15th and the beginning of the 16th centuries, indirect protection measures included the herring fishery in the regulations. The limitations of the number of fishing lines allowed aboard a fishing vessel might also have had a similar protective aim. Already at that time a kind of MOP was already stated.

These are just a few examples of significant decisions in the Flemish fishery. Knowing your history is to know also your future, because although the terms may change, the principles and challenges are still the same.

All these measures are made by governments of many foreign countries. Our occupiers showed a different attitude to the fisheries. However, they all had in common that the basis on which the measures were taken consisted mostly of a mixture of experience and hypothesis.

The answer to all these problems must certainly be found in the complexity of the basic biological processes in the

sea. The ecosystem depends on numerous biological, physical, and chemical processes and interactions, so that predictions on productivity and growth are becoming rather difficult to make in some specific cases. Therefore, your input as members of ICES continues to be vital for the future of the fish populations and their exploitation, and last, but not least, for the safeguard of the environment and the expansion of aquaculture.

I am proud that in Belgium the Department of Sea Fisheries is providing essential data to the database of flatfish populations in many ICES Divisions. The same is valid for the environmental work carried out by the new research vessel "Belgica" under the umbrella of the "Mathematical Model of the North Sea."

One says that big is beautiful. But I believe I may say that a small-sized country like Belgium, with a coastline of just 68 kilometres long, can also be regarded as big in the matters of fishery management.

Finally, I wish you all a very successful congress. Thank you for your attention.

The **President** resumed his address.

Thank you, Minister Gabriëls, for your welcome and your thoughtful and insightful remarks.

I would like to thank you for taking the time from your very busy schedule to be with us today. On behalf of all the participants in this Annual Science Conference and Statutory Meeting, I would ask you to convey our thanks to your colleagues in the Belgian Government for the gracious invitation to ICES to meet here in Belgium. We are grateful for the excellent facilities that have been provided and look forward to the opportunity to sample the well-known Belgium gastronomic delights. Again, Minister, many thanks for joining us here today and for your warm words of welcome. Please join me in expressing our appreciation to Minister Gabriëls.

Pause for applause for the Minister.

There followed a musical interlude (violin and piano) after which the **President** resumed:

Last year in Stockholm ICES launched a series of events leading up to the ICES Centenary celebration in Copenhagen in 2002. These include special Centenary-related events at the ICES Meetings in Stockholm in 1999, Oslo in 2001, and Copenhagen in 2002. A special Symposium on 100 Years of Science was held in Helsinki. The many presentations at that Symposium documented the many accomplishments and achievements of ICES during the first 100 years. The achievements are numerous and the impacts far-reaching.

We have much to celebrate. At the same time ICES is proactively engaged in a process of renewal and building to tackle the major challenges of the 21st century, ICES' second century. Over the past several years ICES has made substantial changes as it approached the

millennium, including major changes in the way we do business. This includes the recent restructuring of the Statutory Meeting so that we now hold Annual Science Conferences where there is a greater focus on science than on managing the business of the organization. Scientific theme sessions are held which are frequently multidisciplinary in nature. The science committees were also restructured to foster a more integrated, multidisciplinary ecosystem approach to marine science. This contrasts with the species orientation, on the fish side, for several decades prior to the 1990s. The Annual Science Conference format seems to have revitalized the science portion of the annual meeting and has attracted a great deal of interest the recent years.

While celebrating the accomplishments of ICES' first 100 years, we must also examine the challenges and opportunities facing us now and look to the future. ICES is now at a pivotal point in its history, as it approaches the centenary and embarks upon its second century. It is time to take stock, to reflect on what we have achieved, and where we might be going in the years ahead.

Over the last half-century, ICES has evolved from a forum for international collaboration in marine science to an organization with a very visible and important advisory role, particularly with respect to marine fisheries management and to a lesser extent, on marine environmental matters. ICES has grown into an intergovernmental organization where the development and coordination of marine science initiatives has become, in many respects, subservient to the powerful advisory role that ICES assumed in the second half of the 20th century. In Europe, ICES is recognized as the main source of independent, politically neutral advice on the management of marine fisheries and on marine environmental issues. Perhaps, more generally, ICES is widely perceived as the international marine scientific body which provides advice on marine fisheries management, primarily for the Northeast Atlantic and the Baltic. ICES' mandate, of course, is much broader than that.

Recently, pressure has been growing for the provision of holistic overviews and advice that integrates fisheries and environmental considerations, advice based on an ecosystem approach. On both the science and the advisory fronts, ICES is moving slowly but definitely towards a more integrated, multidisciplinary ecosystem approach to both the conduct of science and the generation and formulation of advice. There are proposals before the Council of Delegates at this meeting to improve the advisory process, to provide a clearer focus for the provision of integrated advice where necessary.

We have also undertaken, over the past two years, major initiatives to strengthen our links with our customers and clients. In January 1999 we held a Dialogue Meeting in Nantes with fisheries customers from both our Member Countries and the regulatory Commissions. That meeting resulted in a series of recommendations on how best to develop and communicate scientific information and

advice to fisheries managers, as well as issues of timeliness and quality. In February 2000, we held a follow-up meeting in London to discuss progress on the implementation of those recommendations. Earlier this month (September 2000) we held an environmental Dialogue Meeting in Bonn, where we met with a diverse group of environmental scientists and managers, with some fisheries folks to liven up the proceedings.

One of our major challenges in the coming decades will be to ensure that ICES, in discharging its advisory function, focuses on customer needs, both fisheries and environmental. We also need to build better mechanisms for dialogue with those who are most directly affected by the management decisions based on the scientific advice, for example, fishers. As President, I believe that ICES must pursue and enlarge this process of dialogue holding regular discussions with its customers and partners in a frank and pragmatic way. This will assist us in meeting the challenges of the coming decades.

At the same time, we must continue to foster discussion and dialogue within the ICES scientific community on emerging scientific challenges and how these can best be addressed. This kind of discussion occurs both in our new Science Committees, in the existing themes for the various sessions at this year's Annual Science Conference, which are described in your ASC handbook, and in the various symposia we hold. This year we had the Helsinki Symposium, which I referred to earlier. This year we have also seen the publication of the proceedings of several symposia – the Symposium on “Confronting Uncertainty in the Evaluation and Implementation of Fisheries Management Systems”, the Symposium on “Brackish Water Ecosystems”, the Symposium on “Recruitment Dynamics of Exploited Marine Populations, Part I”, and the Symposium on the “Ecosystem Effects of Fishing”, held last year in Montpellier, France. Other interesting symposia are planned for 2001 and 2002.

As we meet here this week to celebrate accomplishments, review developments in science and plan for the future, we are missing some colleagues who have made tremendous contributions to ICES over the years. I now have the sad duty to announce the death of a colleague previously active in the work of ICES and who contributed in a major way to the working of ICES.

Mr Alan Saville of Scotland died on 1 November 1998 after a long and distinguished career. He joined the Marine Laboratory at Aberdeen in 1948. Alan was an active participant in ICES affairs for more than 30 years. His first appearance at an ICES meeting was in 1952 at the 50th jubilee anniversary in Copenhagen. He was active in the Herring Committee, later the Pelagic Fish Committee, and became chair in 1973 as well as chair of the Herring Assessment Working Group South of 62°N. When ICES decided to establish the Advisory Committee on Fishery Management in 1977, Alan was selected as its first chair. It was there that I first met him along with my colleague, now the General Secretary, David Griffith. In

1978 Alan was the convenor of the ICES Symposium on “Assessment and Management of Pelagic Fish Stocks”. Alan's contribution to ICES was extremely valuable.

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

After this pause, the participants resumed their seats and the **President** continued:

As we have seen, ICES has had an illustrious past and has many accomplishments to celebrate through the centenary-related events of the next two years.

In recent decades the world has changed enormously. Advances in technology have profoundly altered our business and everyday lives. And we would probably not recognize the world 50 years hence, if we were given a glimpse of it today. The political context in which ICES functions has changed radically, and our understanding of marine ecosystems and their living resources is improving. ICES has grown from a small but international body of likeminded scientists in the early 1900s to a complex intergovernmental organization with 19 Member Countries (soon to be 20), involving about 1600 scientists, with 12 committees, close to 100 working groups, and a wide range of publications. The rapid pace of change has motivated ICES as a forward-looking organization, to evaluate the kinds of challenges and opportunities it faces and to consider future directions for ICES as it enters its second century.

It is time to develop a new vision for ICES for the new century, to build on what we have learned and to chart new directions. Over the past two years, ICES has developed an initial version of a strategic plan. This was adopted by Delegates at the Council meeting in 1999 as a basis for consultation. Copies of this initial strategic plan have been made available to the ICES community, Member Countries, ICES clients/customers, existing and potential partners and other stakeholders for discussion and comment.

ICES is using this initial strategic plan to stimulate discussion and feedback. The intent is to produce, following that discussion, a centenary strategic plan, which will serve to guide ICES activities over the coming decades.

Yesterday we held an Open Forum to solicit feedback on the initial strategic plan. It was a lively discussion. Many useful and constructive comments were received. We will try to take these into account in developing a revised strategic plan which will reflect accurately the challenges and opportunities ICES faces, and the actions required to make it an even more effective organization in the years ahead. The Council will discuss the next steps regarding the development of the strategic plan during the coming week.

I do not want to prejudice the outcome of those discussions but I would like to offer you some personal thoughts on the future of ICES in the 21st century.

Although fisheries have been a central focus of ICES since its inception, modern scientific thinking and developments on the socio-political front provide a much broader context for marine science. The emphasis, in recent international conventions and agreements, on the need for precautionary and ecosystem approaches to management highlight the need for ICES to not only broaden its scientific base through the further evolution of its science program, but also to enhance its capability to provide scientific advice on an integrated ecosystem-oriented basis.

The mission statement in the initial strategic plan talks about “leading the way in advancing the capacity to understand and advise on the effects of human activity and natural changes on marine ecosystems”. This recognizes that advice is needed on the effects of human activities on marine ecosystems including the management of fisheries, as well as on the implications of changes that occur naturally. The need for broader advice heightens the need to advance our capacity to understand the effects of human activity and of natural change on marine ecosystems. Growing societal pressure for sustainable use of living resources, the conservation of biodiversity, and the protection of marine environment and for understanding the impacts of climate change, emphasize the need for more comprehensive understanding and advice.

Marine ecosystems are inclusive of fisheries, but they are much broader and more complex. The emphasis on marine ecosystems does not diminish the importance of fisheries in a proper conservation framework. It recognizes the potential for building on the success ICES has long had as the leading scientific organization, relative to fisheries science and advice, to keep pace with evolving societal needs for scientific information.

The development and coordination of marine science has become, in many respects, subservient to the powerful advisory role that ICES has assumed. We must ensure that the science program of ICES is not swamped by the pressures of responding to the growing demands for even more timely and detailed advice. A strong and viable science program is vital to the future of ICES. Without sound science ICES will be unable to provide quality advice to meet current and emerging needs.

ICES must evolve to address these broader marine ecosystem issues if it is to survive and flourish in the 21st century. But there are other broader forces at play which will influence whether ICES thrives and prospers in the decades ahead. I refer specifically to geopolitical forces, which could play a major role in shaping the evolution and, indeed, the fate of ICES.

ICES survived major geopolitical upheavals in the 20th century (including two World Wars) which jeopardized its future, and emerged successfully. It survived the

emergence of 200-mile fisheries/exclusive zones in 1977, although it missed the opportunity to extend its advisory function to the entire North Atlantic. It has also survived so far, the emergence and growth of the European Union as a world power and the absorption of many member states of ICES into the EU. In ICES, with its broad marine science mandate, the member states of the EU, which are also members of ICES, have retained their status as contracting parties in ICES.

Nonetheless, geopolitical change could play a major role in shaping the fate of ICES in the coming decades. The EU continues to enlarge. Sweden and Finland have joined. Other countries to the east are seeking membership. The issue will, at some point, be debated again in Norway and possibly in Iceland. What are the implications for ICES if, at some point in the coming decades Norway, and possible Iceland, join the EU?

In the 1980s the EC considered the establishment of its own machinery for the provision of scientific advice on fisheries management. But the European Commission was persuaded of the merits of receiving its scientific advice on fisheries management matters from an independent, politically neutral body, namely ICES. Will this view persist if the EU continues to enlarge as seems the case?

Since virtually all of ICES' advisory functions focussed on the provision of advice pertaining to the Northeast Atlantic and the Baltic (with the exception of NASCO), the future evolution of the EU could play a major role in shaping the destiny of ICES in the 21st century.

I foresee three major alternative scenarios for ICES in the 21st century. These are as follows:

- 1. ICES survives in its current form but stagnates;*
- 2. ICES disappears, sometime in the coming decades;*
- 3. ICES survives and thrives.*

Under the first “survives but stagnates”-scenario, the Northeast Atlantic countries, whether inside or outside the EU would continue to see the need for an independent body to provide scientific advice on fisheries management. ICES would continue but remains heavily focused on fisheries issues, to the detriment of other aspects of its mandate. The “core science” program would wither over time, except as seen necessary to support the advisory function. Environmental issues would remain on the periphery. Ecosystem issues would be addressed only to the extent that countries would say: “How can we maintain our fisheries yet placate and keep at bay the environmentalists?”

This scenario, in my view, is a recipe for stagnation. Yet, some of the comments we have received on the initial strategic plan indicate that without vigorous visionary leadership, ICES could be pushed in that direction.

The second “ICES disappears” scenario is largely tied to the geopolitical changes unfolding in Europe. A greatly enlarged European Union could decide that it

should absorb the functions of peer review of fisheries science and the generation of scientific advice on fisheries within its own bosom. Should Norway and possibly even Iceland join the EU, EU administrators could see this as a viable option. Canada and the USA would end up going their own way and developing alternative arrangements. While this might suit the needs for fisheries advice in the short-term, in the long-term this would prove extremely shortsighted because the value-added asset of ICES as a North Atlantic-wide body for the development of marine science and conservation-oriented advice on broader issues would be lost. While this alternative may seem far-fetched today, it is a realistic possibility over coming decades.

The third scenario I have called "ICES survives and thrives". Under this scenario, ICES would build on its existing strengths and grow to become an international marine science organization with a broad focus on marine ecosystems, including living resources, and their relation to humanity.

Building in its first century, ICES has the opportunity to grow to play a leading role, in partnership with other organizations such as SCOR, the IOC, FAO, PICES and others, in a global network of scientists studying and advising on marine ecosystems. Already scientists from more than 50 countries participate in some ICES symposia.

Marine ecosystem issues are becoming of increasing concern to society on a global basis. In the modern era of globalization and virtual networks, how does ICES transcend geopolitical constraints to reach out to the broader global community of marine scientists? Established now by international convention as an intergovernmental organization of contracting parties with a focus on the North Atlantic and adjacent seas, can ICES transcend its status as a regional body in a sea of global UN bodies? ICES' challenge is how to attract even more effectively the participation of scientists from other countries outside the ICES geographic ambit, and how to reach out more effectively to university scientists and other scientists in non-governmental laboratories, both within ICES countries and beyond.

In recent years scientists from Greece, the South Pacific (Australia and New Zealand), South Africa, and South America (e.g. Argentina and Chile) have participated in ICES Annual Science Conferences. Scientists from many other countries outside the ICES geographical ambit participate in our symposia. This indicates the potential, on the science side, to involve a wider community of scientists than ICES' geographic focus would suggest.

How can ICES position itself to survive and flourish in the 21st century? One possibility might involve associate membership in ICES for countries outside the North Atlantic zone. Such associate membership could be a cross between full membership as a contracting party, and observer status. Associate members might wish to participate fully in the marine science aspects of ICES, but neither seek nor receive advice.

Also, ICES needs to develop a more proactive policy respecting leadership and participation in global marine science programs. ICES has of course, been involved in major international oceanographic programmes in recent decades. The recent example of ICES' involvement in GLOBEC illustrates both the potential advantage of such involvement but also the limitations we currently operate under, which impede our fully effective participation in such initiatives. ICES has currently played a key role in developing a proposal to the GEF for a major Baltic Regional Sea initiative in partnership with HELCOM and IBSFC. We should learn from the GLOBEC experience and build on it to forge a more proactive stance for ICES as an international organization with scientific interests, which exceed the geographic span of the North Atlantic. We need a new policy for the new century, respecting ICES' involvement in global marine science programmes. We need to put in place more effective mechanisms for such involvement on the global scene.

We face many uncertainties in a rapidly changing world. Notwithstanding that, ICES has the opportunity to build on its existing strengths and grow further as an international marine science organization, with a broad focus on marine ecosystems, including living resources, and their relation to humanity.

ICES has many strengths to build on. It has had a clear focus. It has a broad network of exceptionally capable marine scientists who collaborate in the advancement of understanding and the provision of advice. It has a well-established framework for international collaboration. It has an international reputation for good science and credible advice. It is at the forefront in developing approaches to tackling major new challenges of understanding and providing integrated advice on marine ecosystem issues.

The founders of ICES a century ago had a dream. It's up to us, their successors, to build on that dream and to take it further. We too must reach for the stars with our feet firmly grounded in the legacy of ICES' first 100 years. That way lies success and a continued, prosperous future for ICES.

Zooplankton Manual

The **President** called on Roger Harris to make a presentation on the ICES Zooplankton Methodology Manual. He introduced Roger Harris, from the Plymouth Marine Laboratory in the UK, as Chair of the ICES Working Group on Zooplankton Ecology since 1994, and the joint editor of the splendid ICES Zooplankton Methodology Manual which was published recently. Roger Harris drew attention to the importance of zooplankton methodology, and said that each Delegate would receive a free copy.

Open Lecture

The **President** then introduced the Open Lecture, given by Daniel Pauly.

Daniel Pauly is a French citizen, born in Paris. A quick look at his CV suggests that he could be more accurately described as a “citizen of the world” when you take into account the many countries where he has worked and lived. He grew up in Switzerland and studied in Germany where he acquired a “diplom” or M.Sc. in 1974 and a Doctorate in Fisheries biology in 1979 at the University of Kiel. He joined the International Centre for Living Aquatic Resources Management (ICLARM) in Manila, Philippines, in 1979 where he gradually assumed increasing responsibilities as associate and senior scientist, then Programme and Division Director. In 1994 he joined the Fisheries Centre at the University of British Columbia in Canada as a tenured Professor, but remained ICLARM’s principal scientific advisor until 1997.

His scientific output is prodigious, currently numbering some 400 items, including authored and edited books, reports and scientific papers. He has developed or co-developed concepts, methods, and software which are in use throughout the world, for example, ECOPATH for ecosystem analysis and FISHBASE, the computerized

encyclopaedia on fish. He has authored or co-authored several provocative scientific papers, including recently a paper on “Fishing down marine food webs”, published in Science (Washington), 1998 Vol. 279, No. 5352, pp. 860–863.

Daniel Pauly sits on the editorial boards of several journals. In 1998 he became the principal scientific investigator of the large “Sea Around Us” project, devoted to basin-scale analysis of impacts on marine ecosystems and presently focussed on the North Atlantic.

Daniel Pauly presented a 40-minute lecture entitled *Fisheries and Conservation: A Program for Their Reconciliation*, illustrated by slides. An abstract of the text is available on ICES web site at:

[<http://www.ices.dk/asc/2000/openlecture00.htm>]

The **President** thanked Daniel Pauly for the Open Lecture and adjourned the session.

2000 ASC — Scientific Programme

Wednesday 27 September			
09.00–11.00	11.30–13.00	14.00–16.00	16.30–18.00
GENERAL ASSEMBLY and Open Lecture by Prof. Dr D. Pauly (Canada) on “Fisheries and Conservation. A Programme for their Reconciliation” Ambassadeur Room	Defining the Role of ICES in Supporting Biodiversity Conservation (MINI) Ambassadeur Room		
	Development of Reference Points and Management Systems for Fisheries and the Marine Ecosystem (X) Morus Room		Incorporation of External Factors in Marine Resource Surveys (K) Morus Room
	North Atlantic Processes (L) Erasmus Room		
	Downturn in North Atlantic Salmon Abundance (Y) Vives Room	Sustainable Aquaculture Development (O) Vives Room	New Trends in Fish Feeding in Aquaculture (P) Vives Room
	Ambassadeur Room		

Thursday 28 September				
08.30–09.15	09.30–10.30	11.00–12.30	14.00–16.00	16.30–18.00
Invited Lecture by Dr Patrick Gentien (France) on “The “Species-of-Interest” approach in understanding harmful algal blooms: implications in modelling population growth of <i>Gymnodinium mikimotoi</i> ” 				

2000 ASC — Scientific Programme

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Friday 29 September			
08.30–10.30	11.00–12.30	13.30–15.30	16.00–18.00
Spatial and Temporal Patterns in Recruitment Processes (N) Ambassadeur Room Classification and Mapping of Marine Habitats (T) Morus Room Trophic Dynamics of Top Predators: Foraging Strategies and Requirements, and Consumption Models (Q) Erasmus Room Medium-Term Forecasts in Decision-Making (V) Vives Room	Fisheries Technology Committee (B) Ambassadeur Room Oceanography Committee (C) Morus Room Resource Management Committee (D) Erasmus Room Marine Habitat Committee (E) Vives Room Mariculture Committee (F) Descartes Room Living Resources Committee (G) Picard Room Baltic Committee (H) Chambers S. Stevin		

Saturday 30 September				
08.30–09.15	09.30–10.30	11.00–12.30	13.30–15.30	16.00–16.30
Invited Lecture by Dr A. E. Gargett (Canada) on “How do extremes of climate variability affect biological production in estuarine systems?”	Spatial and Temporal Patterns in Recruitment Processes (N) Ambassadeur Room			CLOSING SESSION
	Downturn in North Atlantic Salmon Abundance (Y) Morus Room	Trophic Dynamics of Top Predators: Foraging Strategies and Requirements, and Consumption Models (Q) Morus Room	Classification and Mapping of Marine Habitats (T) Morus Room	
	Efficiency, Selectivity and Impacts of Passive Fishing Gears (J) Erasmus Room			
	Ambassadeur Room			
	Marine Biological Invasions: Retrospectives for the 20th Century— Prospectives for the 21st Century (U) Vives Room			Ambassadeur Room

OPEN LECTURE

Fisheries and Conservation: a Program for their Reconciliation

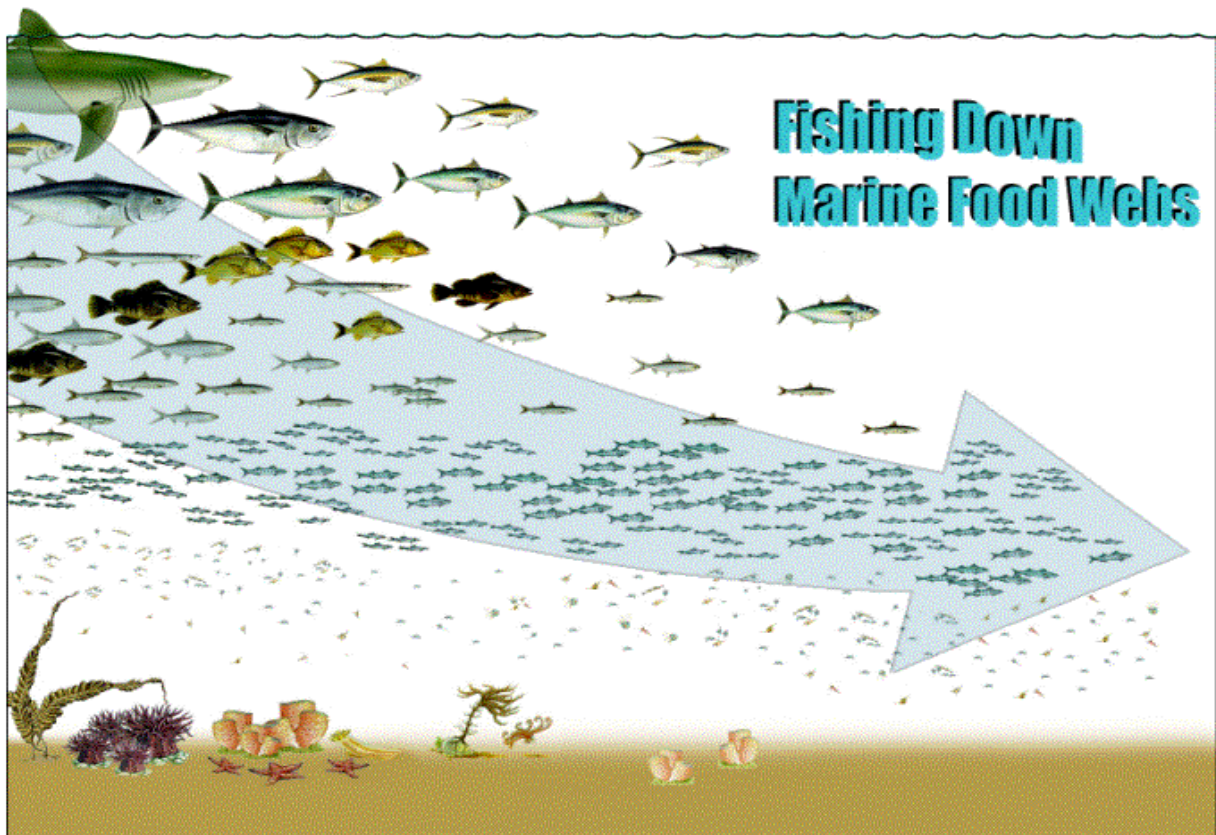
Daniel Pauly, Canada

There are two disciplines presently working on the status of marine organisms: Fisheries Science, founded at the end of the 19th century as a very applied discipline, and Conservation Biology, founded at about the same time as a terrestrial discipline, but which turned its gaze to marine organisms and ecosystems only recently. These two disciplines – like all scientific ventures – have their own standards and aims, as articulated by leading practitioners, and their seminal contributions in specialized journals. Both also have different 'clients': fisheries scientists most frequently work for government laboratories, and their work is ultimately aimed at the fishing industry; on the other hand, conservation biologists tend to be university based, and they often work for conservation-orientated non-governmental organizations. Unfortunately, these parallel tracks lead to many problems, starting with mutual lack of recognition for each other's achievements, and often leading to confrontations that are increasingly less justified, given the enormity of the challenge caused by relentless

overexploitation of fisheries resources, and their impacts on ecosystems, both culminating in 'fishing down marine food webs'.

The elements of a reconciliation between fisheries and conservation biology can thus be readily identified; notably they must include recognizing the legitimacy of the key tenets of each (that fishing should remain a viable occupation; that the ecosystems and their biodiversity are allowed to persist).

One area where this reconciliation would most rapidly yield significant advances is ecosystem modeling, whose importance has increased with increasing demand, also by the public at large, for a transition from single-species to ecosystem-based management of fisheries. An example, involving modeling work enabling the evaluation of marine protected area as a tool for optimizing the fisheries of the North Sea was presented, along with ways this could be followed up.



KEYNOTE LECTURE 1

The “Species-of-Interest” Approach in Understanding Harmful Algal Blooms: Implications in Modelling Population Growth of *Gymnodinium mikimotoi*

Patrick Gentien

Gymnodinium mikimotoi is a ubiquitous ichthyotoxic dinoflagellate species causing harm in the North Sea and the Atlantic, as well as waters off Japan, South America, and South Africa. Its blooms have deleterious effects on marine aquaculture stocks (fish and shellfish), on species recruitment (shellfish and probably fish), and possibly on marine flora and ecosystems.

The toxicity of this species is due to a labile exotoxin (20 min. half-life). Synthesis of this exotoxin makes it possible to determine the mechanism of action for this toxin: it inhibits in a non-specific way membrane ATPases. These enzymes are the energy source for ion exchanges at membranes. Biological targets are, therefore, incapacitated in their osmotic pressure regulation. The effect of these exotoxins have been studied in terms of economic losses, but never in terms of the effects on the ecology and the development of a bloom. The spatial scale of action in relation to degradation is of the order of a few centimetres. Since individual cells have been observed to aggregate during the growth phase of the population, it is very likely that the population creates its own specific environment.

In order to define the specificities of this environment in terms of population dynamics, the effect of the toxins on different control (or hexicological, according to the definition of *Miwatt*) factors have been examined.

Oxygen radicals produced by decay of the toxin can only optimize the organic matter uptake. Allelopathic properties of the toxin have been demonstrated and reduce competition for substrate. Toxins and the mucus produced by the dinoflagellate population lower the grazing pressure. On the other hand, though less sensitive than their competitors, *G. mikimotoi* cells are sensitive to their own toxins. Cells have developed an anti-collision system, effective in still environments, which has proven not to act above a certain threshold of turbulence.

Based on the hierarchization of the processes, a simple formulation of population growth has been used to simulate hindcast time series in the Bay of Biscay (France) according to the following formula:

$$\frac{dC}{dt} = \mu(T, hv)C - \alpha\gamma C^2$$

with μ : growth rate, hv : light intensity, and γ : shear.

The zone of inoculation of the population was defined from different scenarios using analysis of trajectories. The results of the modelling exercise are compared with the time series obtained from the monitoring network in terms of confinement on the vertical, timing of events, and geographical extent.

Omission in this model of any growth limitation by nutrients and the advantages of using a “species-of-interest” approach are discussed.

KEYNOTE LECTURE 2

How Do Extremes of Climate Variability Affect Biological Production in Estuarine Systems?

Ann E. Gargett

Gargett *et al* (2001) concluded that there is increasing evidence that extremes in climate variability correlate with major changes in coastal ecosystems, culminating in large variations in marine fish stocks. Any such correlations presumably arise through effects of atmospheric forcing on ocean processes, which in turn shape the environment in which biological systems function. Climate-induced changes in physical ocean processes could exert “control” over zooplankton production from:

- (i) below, if physical processes set the level of primary production available to support higher trophic levels,
- (ii) within, if physical processes determine zooplankton growth rates, or
- (iii) above, if physical processes affect the rate at which zooplankton are themselves cropped.

These possibilities are explored using a simple N-P-Z biological model coupled to a physical box model of the

Strait of Georgia/Haro Strait/Strait of Juan de Fuca system of southern British Columbia. Model results indicate that while observed levels of interannual variation in the physical forcing of this system reproduce observed levels of variability in the annual cycles of characteristic physical parameters such as salinity, stratification, etc., there is very little associated variation in the embedded biological system. However, large changes in annual cycles of biological variables are observed; comparable changes can be produced in the model by relatively minor changes in biological rate parameters (phytoplankton growth rate, zooplankton feeding rate, and/or mortality rate). Thus, model results strongly suggest that climate variability does not affect estuarine ecosystems directly, i.e. by effects on advective flows, nutrient supply rates, etc., but rather indirectly, through modification of characteristics of the physical environment which affect crucial biological rate parameters. In strongly estuarine systems, turbidity changes associated with variability in freshwater forcing is a likely cause of such rate modification.

Reports of Theme Sessions

MINI-SYMPOSIUM ON DEFINING THE ROLE OF ICES IN SUPPORTING BIODIVERSITY CONSERVATION

Co-Conveners: J. Rice (Canada) and M. Tasker (UK)

Background

The Mini-Symposium was set up to consider what ICES can contribute to knowledge and conservation of biodiversity, and what conservation biology means in ICES activities. The topics intended to be addressed were:

- Genetic, species, habitat, and marine seascape conservation;
- Biodiversity in ICES advisory tasks;
- Taxonomy and systematics;
- Surveys and monitoring;
- Effects of biodiversity loss on ecosystem functioning;
- Management objectives for biodiversity; What does biodiversity mean to partner commissions?

Presentation of papers

The Mini-Symposium attracted eleven papers and four posters, covering most of the intended topics. The Session was well attended, with over 100 participants. Question and discussion periods were lively. Talks were well prepared with excellent supporting materials and quality of presentation.

Taxonomy, systematics, surveys, and monitoring were generally treated in the poster contributions, although one of the papers reviewed a new checklist of the ichthyofauna of the Baltic and highlighted how such a checklist can be a tool in detecting changes in biodiversity. During the discussion period, the need for training a new generation of taxonomists and systematists was stressed, if biodiversity of the full marine ecosystem is to be inventoried and monitored. However, it was thought that such training was the responsibility of Member Countries and their universities. The ICES role was to have members promote such work in their home countries.

Three of the contributions addressed the importance of conservation of genetic and meta-population / sub-stock diversity. There was clear evidence that important genetic diversity does exist below the scale of full stocks or species, and that conventional approaches to the management of living marine resources do not ensure that such diversity is protected. Both presentations and discussion stressed particularly the risk of serial depletion of spawning aggregations within stocks through harvesting, and the detrimental consequences of such situations. It was felt that such considerations should figure more prominently in ICES advice on fisheries management, although no specific

recommendations for changes to practice were brought forward.

Several papers explicitly or implicitly attempted to look back to describe biodiversity conditions prior to large-scale human activity in the marine environment (the “virgin” state). The difficulty in doing this was widely noted, but the inclusion of further disciplines, such as paleoecology could prove helpful. If scientists from these disciplines cannot be attracted into the ICES fold, then perhaps ICES could seek suitable working alliances in these areas.

Only one talk focused directly on the role of biodiversity in ecosystem structure and function, but the theme was present in many of the talks and posters. Contributions during the question and discussion period likewise highlighted the unpredictable but sometimes serious consequences of loss of biodiversity, and the Open Lecture which immediately preceded the Mini-Symposium also developed this theme. Particular concern was expressed regarding threats to biodiversity posed by introductions and transfers of species. Again, no specific proposals were brought forward regarding biodiversity and ecosystem functioning. However, it was stressed that the Science Committees must remain strong and active, to ensure that scientific understanding of ecosystem structure and function continues to progress. This includes the Science Committees promoting work focused on quantifying biodiversity by habitats and regions, and studying how human activities impact biodiversity.

Management objectives were addressed in several of the talks, covering both management objectives for species at risk and for ecosystem quality, particularly as reflected in the status of benthic organisms and the full catch of fisheries. In the case of reference points for benthos, contributions made clear that the task of defining scientifically sound objectives is not simple, and superficial objectives are likely to be misleading guides for management decisions. Progress was reported in developing measures of fisheries impacts on fish communities through monitoring both catches and discards, but it was also stressed that effective measures will require more data, of higher reliability, than are generally available in historic fisheries data sets. In discussion, it was stressed that more analytical work with real data, ecosystem models, and simulated data would be necessary to make progress on identifying explicit management objectives for biodiversity. It was also stressed that the objectives and metrics are not ends in themselves. They are no help unless there is enough information in the metrics associated with the objectives, or at least with the data from which the metrics are calculated, to be useful to management. In this context,

“useful” had to include diagnosing how the ecosystem has changed, drawing inferences about whether the change should be of concern for conservation, and proscribing actions which would mitigate the change, if necessary. Some of these tasks could be addressed in a Workshop already being planned for comparing and testing ecosystem models. The attendees strongly supported the concept of the Workshop, and agreed that some individuals with a particular interest in biodiversity metrics and objectives should become part of the planning group being formed to organise the Workshop.

With regard to species at risk, it was noted that the scientific activities associated with listing species at risk are all activities for which ICES has great expertise, yet the ICES community has had little involvement in the scientific initiatives associated with this important part of conservation biology. Both the conservation and management of living marine resources and the credibility of ICES could suffer if scientific assessments on the risk of extinction of marine species made by conservation biologists appear to conflict with scientific advice on the management of fisheries and stocks given by ICES. Both the preceding Open Lecture and two of the papers noted the challenge by conservation biologists to some of the underlying assumptions of fisheries management on the ability of fish stocks to recover. It was unclear if this matter was best addressed in the first instance at the national level, or through ICES science activities. Therefore, there was agreement that ICES should make formal contact with agencies specifically involved in the identification and recovery of species at risk, to explore avenues to ensure that the scientific expertise of ICES is fully used in this important field.

Two of the papers addressed directly how ICES Advisory activities should change to give biodiversity concerns more appropriate profile in ICES advice. The theme was also visited in many of the other talks and discussions. There was strong consensus both that ICES is a highly appropriate body to provide scientific advice on marine (and freshwater anadromous) biodiversity, and that national and international agencies mandated to conserve biodiversity need such advice. There was also strong consensus that at present ICES advice is far too piecemeal and that biodiversity concerns can only be addressed through integration. The advisory structure of ICES should be changed to ensure that ICES advice is much better integrated, with biodiversity conservation as a core principle. There was some discussion of the changes to the advisory committees being considered at this meeting. Several participants expressed strong support for increasing the accountability of the existing Advisory Committees for including biodiversity in their advice, particularly on fish quotas, rather than creating a separate Advisory Committee to deal with ecosystem issues.

Concluding discussion

There was strong agreement that ICES must give more prominence to biodiversity in both its Science and Advisory activities. The alternative is to become a backwater in the larger scale of marine conservation and scientific understanding. Specific follow-up actions could include:

- Participants should approach their Delegates as quickly as possible to discuss Advisory structures that would address biodiversity concerns adequately.
- The proposed Workshop on Ecosystem Models, and the preceding Planning Group for the Workshop (C.Res. 2000/2ACME06), should give specific attention to biodiversity.
- ICES should approach agencies and organisations active in the conservation of biodiversity to formally explore avenues to link ICES scientific expertise and Advisory capabilities to activities of these agencies. ICES should also discuss with them why ICES has not been sought out as a source of scientific information and advice, and consider seriously whatever information is received.
- There should be a Theme Session for 2001 on ecosystem metrics and objectives. The Session should focus clearly on applications, illustrating *how* metrics and objectives can help in diagnosing what is “wrong” with a system and what measures will rectify the problems, and not be simply be a forum for proposing new metrics or reviewing old ones¹.
- A Study Group or Theme Session should explore the value of regional approaches to biodiversity conservation and fisheries management.
- A Theme Session in 2002 on experience with and perspectives on Marine Protected Areas (MPAS) as a tool for conservation of biodiversity and improvement of sustainability of fisheries would be appropriate. A model of particular interest would be choosing several different areas within the ICES region, and identifying for each one individual experienced in fisheries science and one experienced in conservation biology to prepare parallel contributions on siting and sizing an MPA in that area.

¹ It has been agreed that the 2001 ASC programme will include a Theme Session on the “Use and Information Content of Ecosystem Metrics and Reference Points” (Session code: T).

Documents presented

Mini:01	Chris Frid and Leonie Robinson:	Ecological reference points for North Sea benthos: can we manage benthic biodiversity?
Mini:02	Chris Frid, Stuart Rogers, Mike Nicholson, Jim Ellis, and Steve Freeman:	Using biological characteristics to develop new indices of ecosystem health
Mini:03	Sarah Jones, Stephan Lutter, and Simon Cripps:	Scientific advice for marine ecosystem management. An NGO perspective
Mini:04	Thomas Osborn and Richard T. Barber:	Why are large, delicate, gelatinous organisms so successful in the ocean's interior?
Mini:05	Jake Rice:	ICES and species at risk
Mini:06	Marie-Joëlle Rochet, Verena M. Trenkel, Jean-Charles Poulard, and Isabelle Péronnet:	Using discards estimates for assessing the impact of fishing on biodiversity
Mini:07	Rob Stephenson and Ellen Kenchington:	Conserving fish stock structure is a critical aspect of preserving biodiversity
Mini:08	Mark L. Tasker and Paul Knapman, David Donnan, Clare Eno, Barry Haynes, Sandra Close, and Bob Hastings:	How ICES can help integrate biodiversity considerations into fisheries advice
Mini:09	A. Filip M. Volckaert, Edgar Daemen, Tom Cross, and Frans Ollevier:	The genetic structure of European eel revisited and implications for its conservation
Mini:10	Anna Was and R. Wenne:	Biodiversity at the population genetic level: microsatellite DNA polymorphism in the sea trout populations from southern Baltic
Mini:11	H.M. Winkler, K. Skora, R. Repecka, M. Pliks, E. Urtans, A. Gushin, and H. Jespersen:	Checklist and state of Baltic Sea fish species
Mini:12 Poster	A.V. Dolgov:	New data on composition and distribution of the Barents Sea ichthyofauna
Mini:13 Poster	Michele Gristina, G. Garofalo, G. Bono, and D. Levi:	Effects of commercial trawl fishing in the Strait of Sicily on the diversity of demersal resources
Mini:14 Poster	Yves Samyn and Edward Vanden Berghe:	Faunistics as the impetus for conservation of sea cucumbers (Echinodermata: Holothuroidea) in the littoral waters of Kenya
Mini:15 Poster	Edward Vanden Berghe and Yves Samyn:	The use of databases for conservation of sea cucumbers (Echinodermata: Holothuroidea) in the littoral waters of Kenya

THEME SESSION ON TEMPORAL AND SPATIAL TRENDS IN THE DISTRIBUTION OF CONTAMINANTS AND THEIR BIOLOGICAL EFFECTS IN THE ICES AREA (S)

Co-Conveners: R. Laane (Netherlands), P. Matthiessen (UK), and T. Lang (Germany)

Introduction

A variety of studies have been conducted in the ICES area on spatial and temporal aspects of the distribution of marine contaminants and, increasingly, on their biological effects. At present, research and monitoring of biological effects of contaminants in marine organisms form an important component of national and international programmes in the ICES area aiming at the assessment of the state of the marine environment. Considerable progress has been achieved in past years with respect to the development and standardisation of techniques for the measurement of biological effects at various levels of biological organisation. ICES has actively been involved in this process through the work of its Working Groups and Committees.

However, the experience gained in recent years has shown that the biological effects measured could not in all cases be linked to contaminants present in the marine environment and that there is a need to better understand cause-effect relationships. In addition, some of the techniques used have failed to give clear results, even in more highly contaminated areas. Among other factors, this was considered linked to the following:

- Biological effects considered induced by contaminants can be caused, or at least to a great extent be influenced, by a variety of other external natural and anthropogenic factors.
- Current biological effects techniques are often not sensitive enough or too unspecific to measure what they are supposed to detect.
- Biological effects techniques do not yet cover a broad enough range of possible biological responses of individual organisms or populations/communities to contaminant exposure.
- Contaminants levels in the sea are, with several notable exceptions, often too low to exert any significant responses with present detection methods.

The purpose of the Theme Session was to bring together scientists from the ICES area to provide an overview of current activities in the field of biological effects of contaminants and new strategies to overcome the above-mentioned problems. Furthermore, it was the intention of the co-conveners to enhance the profile of this work and to bring it to the attention of other members of the ICES community in order to prepare the ground for future multidisciplinary activities.

Scientific contributions

Doc. S:01 provided information on the relationship between environmental factors (in particular water temperature and organic contaminants) and the frequency of malformations in pelagic fish embryos from the southern North Sea. An exceptionally high malformation rate in dab (*Limanda limanda*) embryos recorded in early spring 1996 could be linked to a considerably enhanced input of organic contaminants to the German Bight through the River Elbe. In particular, levels of DDT and its metabolites were found to be strongly increased both in adult female dab from the German Bight and in suspended matter in the Elbe estuary in 1995.

Doc. S:02 presented data on trends measured in mercury contamination over the past 100 years in epipelagic, mesopelagic and deep-sea marine food webs, showing 3–10 fold increases in mercury concentrations. It highlighted the usefulness of seabird feathers as a reliable monitoring tool. It further focused on a comparison between point-source and riverborn inputs versus atmospheric inputs and on processes involved in the methylation of inorganic mercury in these inputs.

Doc. S:03 described Norwegian studies carried out in the OSPAR Joint Assessment and Monitoring Programme (JAMP) framework on the relationship between biomarker responses measured in cod (*Gadus morhua*) and environmental contaminants. The results of statistical analyses using Principal Component Analysis (PCA) and Analysis of Covariance (ANCOVA) revealed some expected and unexpected relationships, indicating the presence of contaminant effects, but also the complex nature of the relationships.

Doc. S:04 focused on strategies for studying links between individual and population/community responses to environmental contaminants. It described advantages and disadvantages of different approaches in use (biomarker, bioassay, population/community studies) and highlighted research requirements to be fulfilled in order to understand better the relationship between contaminants and their biological effects.

Doc. S:05 gave a progress report on an international sea-going workshop on biological effects of contaminants in the pelagic ecosystem, to be held under the co-sponsorship of ICES and IOC from late February to early September 2001. The workshop will involve a number of consecutive cruises carried out on board research vessels from Germany, Norway and the UK along contaminant

gradients in the German Bight and in the Norwegian sector of the northern North Sea. The aim of the workshop is 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 will be assessed for their applicability for future monitoring programmes, e.g., related to effects of produced water discharged by the offshore oil industry. A large variety of biomarker, bioassay and *in situ* techniques will be applied during the workshop, involving field sampling of organisms and cage experiments.

Doc. S:06 was linked to Docs. S:08 and S:11 and provided information on biomarker studies (EROD, ChE) in estuarine flounder (*Platichthys flesus*) from the UK, clearly indicating the presence of sub-lethal effects of environmental contaminants in some British estuaries, possibly linked to PAHs, PCBs (EROD) and organophosphate/carbamate pesticides (ChE).

Doc. S:07 described a new Dutch approach (QPID) to identify and verify environmental toxicity. The approach is based on a combination of three components: *in vivo* bioassays, *in vitro* screening assays, and Toxicity Identification and Evaluation (TIE).

Doc. S:08 was linked to Docs. S:06 and S:11 and gave an overview of the UK EDMAR project, investigating effects of endocrine-disrupting chemicals on estuarine fish species by means of various *in situ* and *in vitro* biomarker techniques. The results so far available indicate the occurrence of estrogenic effects in local populations of flounder and viviparous blenny (*Zoarces viviparus*) in contaminated estuaries. Feminised external secondary sexual characteristics have been observed in sand gobies (*Pomatoschistus* spp.). There is further preliminary indication of androgenic effects in sticklebacks (*Gasterosteus aculeatus*), which, however, still have to be confirmed by further studies.

Doc. S:09 was the only contribution on contaminant effects in the Baltic Sea. It described results from a study of reproductive impairment in Baltic cod and its linkage to organochlorine levels in cod and biomarker responses (EROD, AChE). Although levels of DDT and PCBs and EROD levels were found to be high and, in addition, an inhibition of AChE was measured, no correlations with regard to egg and early larval development were detected. However, subsequent toxicant challenge experiments conducted with cod larvae exposed to pyrene showed that lethal body burdens were considerably reduced in the offspring of adults showing elevated EROD responses to contaminants.

Doc. S:10 provided information on the use of sediment bioassays in monitoring and surveillance programmes in the UK. Two assays have been used for whole sediments and dredged material, one with the lugworm *Arenicola marina* and the other with the amphipod *Corophium volutator*. Another test with the benthic copepod *Tisbe*

battagliai was applied to sediment elutriates. It was concluded from the results that sediment bioassays clearly have a role in national monitoring programmes and hence their inclusions in the OSPAR JAMP guidelines. However, it was emphasised that there is a need to use a battery of tests for assessing dredged material toxicity and a need to harmonise these tests applied in different countries. It was further stressed that there is a requirement to develop techniques to link the results of short-term acute toxicity assays to chronic biological effects.

Doc. S:11 is linked to Docs. S:06 and S:08 and refers to studies on the characterisation of hazardous substances in the UK marine environment using the Toxicity Identification and Evaluation (TIE) approach with sediment and water samples. The TIE was combined with bioassays measuring acute toxicity and mutagenic as well as oestrogenic activities of the isolated contaminant fractions. The tests succeeded in identifying a number of compounds that exert biological effects, including pesticides, surfactant metabolites, natural steroids and industrial chemicals.

Doc. S:12 provided results from a holistic statistical analysis of data submitted by ICES Member Countries on the prevalence of wild fish diseases (North Sea dab) in combination with data on potentially explanatory factors, including hydrography, nutrient, contaminant and CPUE data. Data were extracted from the ICES Environmental, Oceanographic and Fishery Databanks and incorporated in multivariate models. This work has been carried out over the past few years as a major activity of the ICES Working Group on Pathology and Diseases of Marine Organisms and the paper summarises current findings. A variety of factors studied in the analysis, including contaminants, were found to be significantly related to disease prevalence, reflecting the multifactorial disease aetiology, but can also be attributed to some high correlations among some of the explanatory factors. It was emphasised that the analysis suffered from the apparent lack of data in the ICES Environmental Databank, particularly on contaminants in water, sediments and biota. For further holistic analyses, more data are urgently required and ICES Member Countries should, therefore, be encouraged to submit relevant data held in national data banks.

Posters presented focused on the Dutch QPID approach (see above), on biomarkers and PAH concentrations in blue mussels (*Mytilus edulis*) in Loch Leven, Scotland, impacted by an aluminium smelter and on biological effects related to PAHs in flounder from the Firth of Forth, Scotland.

Discussion and conclusions

Fifty participants attended the session, which can be considered a good level of interest. The scientific presentations stimulated a lively and constructive discussion, which is summarised in the following paragraphs.

The participants agreed that, despite the decreasing trends in the concentrations of various toxic contaminants in the marine environment, there is strong evidence that contaminants continue to affect marine organisms in certain areas. Specific cases were the occurrence of effects related to endocrine-disrupting substances in estuarine waters of the UK and the finding of increased malformation rates in pelagic fish embryos in the 1990s attributed to organic contaminants. Therefore, further research and monitoring activities are urgently needed to identify causes and develop appropriate mitigation measures. It was emphasised, however, that, due to the complexity of the relationships between natural and anthropogenic factors and the limitations of the biological effects techniques and strategies applied so far, it has only been possible in a few cases to establish clear cause-effect relationships.

It was pointed out that, in order to assess biological effects of contaminants in a comprehensive manner, a battery of tests has to be applied in a fully integrated way. This could ideally be applied on a variety of species representing different ecological functions within a given habitat. However, due to resource constraints, it would be more feasible to focus on single target species, but this should then involve techniques measuring effects at various biological levels (from the molecular to the population or community). In this context, a reference was made to the EU-funded project Biological Effects of Environmental Pollution in Marine Ecosystems (BEEP), which will start in late 2000. The project aims at the development and establishment of integrated biological effects measurement strategies for coastal areas of the Baltic Sea, the North Sea and the Mediterranean Sea, which can be used for future coordinated environmental monitoring programmes in these areas.

The incorporation of data on environmental factors other than contaminants, describing the habitat in which the target organisms live, was considered essential for an assessment of the role of these substances. The participants agreed that Doc. S:12, describing the statistical analysis of the ICES fish disease data in relation to environmental factors, constituted a good example of how this can be achieved in a holistic, ecosystem-oriented way. It was pointed out that methodologies for a comprehensive and holistic data

assessment are available now, but that unfortunately there is a lack of sufficient long-term data. This is particularly the case with certain data sets in the ICES Secretariat's databanks. It was, therefore, strongly recommended by the participants that ICES explore ways of ensuring a continuous data flow from national sources to the ICES data banks.

Comments were made on the need for the assessment of effects of contaminants at the population level. As an example, studies on effects of endocrine disrupting chemicals (or other contaminants affecting reproduction) on the fecundity of fish species were suggested. It was emphasised that there is a general need for more multidisciplinary studies involving ecotoxicologists, fish ecologists and stock assessment experts. Due to its unique structure, ICES could play a major role in such an approach.

A number of issues related to the above which require further work were identified:

- Development of techniques for the integration of results derived from studies involving a battery of tests measuring biological effects at various levels of biological organization (from the molecular to the community);
- The impact of natural factors on the variability of biological effects of contaminants;
- The link between results from biomarker and bioassay studies and higher order effects at the population/community level;
- The validation of biological effects techniques with an emphasis on their responsiveness to contaminants;
- The incorporation of environmental data characterising the target species' habitat in the assessment of contaminant effects;
- The establishment of national and ICES data banks containing relevant and sufficient long-term data;
- The development of further techniques covering as yet unconsidered aspects of contaminant effects (e.g., population/community effects).

Documents presented

S:01	H. von Westernhagen, V. Dethlefsen and M. Haarich:	Temporal trends in malformations of pelagic fish embryos from the southern North Sea in relation to anthropogenic xenobiotics
S:02	Stuart Fleming, R.W. Furness, and Ian M. Davies:	Contemporary patterns and historical rates of increase of mercury contamination in different marine food chains
S:03	Ketil Hylland, Birger Bjerkeng, and Norman Green:	Is there a relationship between accumulated contaminants and biomarker responses in Atlantic cod, <i>Gadus morhua</i> ?

S:04	Ketil Hylland:	Strategies to investigate links between community response and individual response to environmental contaminants
S:05	Ketil Hylland:	Biological effects of contaminants in pelagic marine ecosystems – a practical workshop
S:06	Mark F. Kirby, Mark Hurst, Carole A. Kelly, Sonia J. Kirby, Paula Neall, Tina A. Tylor, Steven Morris, and Peter Matthiessen:	EROD and ChE measurements in flounder (<i>Platichthys flesus</i>) as monitoring tools in English estuaries
S:07	Stuart Fleming, Robert W. Furness, and Ian M. Davies:	Contemporary patterns and historical rates of increase of mercury contamination in different marine food chains
S:08	Peter Matthiessen, Yvonne Allen, John Bignell, John Craft, Steve Feist, Gary Jones, Ioanna Katsiadaki, Mark Kirby, Fiona Robertson, Sandy Scott, Christie Stewart, and John Thain:	Studies of endocrine disruption in marine fish - progress with the EDMAR programme
S:09	Rolf Schneider, Doris Schiedek, and Gitte I. Petersen:	Baltic cod reproductive impairment: ovarian organo-chlorine levels, hepatic EROD activity, muscular AchE activity, developmental success of eggs and larvae, challenge tests
S:10	J. Thain, Y. Allen, S. Kirby, and J. Reed:	The use of sediment bioassays in monitoring and surveillance programs in the UK. A preliminary assessment
S:11	Kevin V. Thomas, Mark R. Hurst, Jacqueline Lavender, Peter Matthiessen, John E. Thain, and Mike J. Waldock:	Characterising hazardous substances in the UK marine environment
S:12	W. Wosniok, T. Lang, V. Dethlefsen, S.W. Feist, A.H. McVicar, S. Møllergaard, and A.D. Vethaak:	Analysis of ICES long-term data on diseases of North Sea dab (<i>Limanda limanda</i>) in relation to contaminants and other environmental factors
S:13 Poster	A.D. McIntosh, L. Webster and D. Richardson:	Temporal trend observations in fish and sediments in the Clyde estuary
S:14 Poster	A.D. McIntosh, L. Webster and B. Gowland:	Biomarkers and PAH concentrations of the common mussel, <i>Mytilus edulis</i> , in an industrially polluted sea loch
S:15	Daniel Richardson, Colin Moffat, Ron Stagg, Ian Davies, and Pat Pollard:	Monitoring the biological effects and the origins of PAHs in the Firth of Forth, Scotland

THEME SESSION ON MARINE HABITAT CLASSIFICATION AND MAPPING (T)

Co-Conveners: J. Side (UK), D.J. de Jong (Netherlands), and R. Allee (USA)

Rapporteur: E. Jagtman (Netherlands)

Introduction

Habitat classification and mapping are a prerequisite for the assessment of the health status of marine ecosystems, their management and protection. The Theme Session reviewed and summarised the results of habitat classification and mapping projects already ongoing in the ICES area, linked ICES activities with ongoing OSPAR work on the EUNIS (European Nature Information System) classification system, and identified how work on the classification can be advanced within ICES.

Presentations

Fifteen papers were presented, ranging from pure habitat classifications via available and new mapping techniques to actual and proposed habitat mappings.

Two papers dealt with new techniques in development: "Very High Resolution Synthetic Aperture Sonar" and "Autonomous Underwater Vehicles" respectively. Both techniques potentially offer new possibilities to the already available underwater techniques. "Very High Resolution Synthetic Aperture Sonar" might be very helpful to improve the quality of the interpretation of seabed features as it offers a possibility of very high resolution that is range independent. Autonomous underwater vehicles offer the possibility to improve the efficiency of actual mapping of the seabed, as they are able to map special features in an area by "learning" the characteristics of these features.

One paper gave an extensive overview of presently available techniques for underwater surveys and sampling, and their limitations. In a number of papers it was demonstrated that the use of different techniques in combination offers better opportunities for understanding the relationships between physical features and the biotics in and/or on the sea floor. This included the use of a combination of remote sensing techniques (Side Scan Sonar and video photography) with actual sampling of the sediment and the benthic fauna (grab, trawl, etc). Relations between the remote sensing information and the biological contents were made and demonstrated for small areas, but appear more difficult to observe in shallower dynamic areas. In most cases also, examples of maps, generally of small areas, were presented to demonstrate results of the techniques described.

Another paper dealt with a GIS technique to compose habitat maps by combining monoparametric maps, which were classified. The classifications of these maps were based on the relations between the parameters and the habitat classes. Here, too, examples of habitat maps were shown. In one paper the initiative to map a large part of

the Norwegian shelf and deep-sea area using a combination of different techniques on different scales was described. One important part of this project (MAREANO) is the storage of new, and old, data into one central database, accessible via the internet for all interest groups. The special focus in this project is the protection of the extensive cold coral fields in this area.

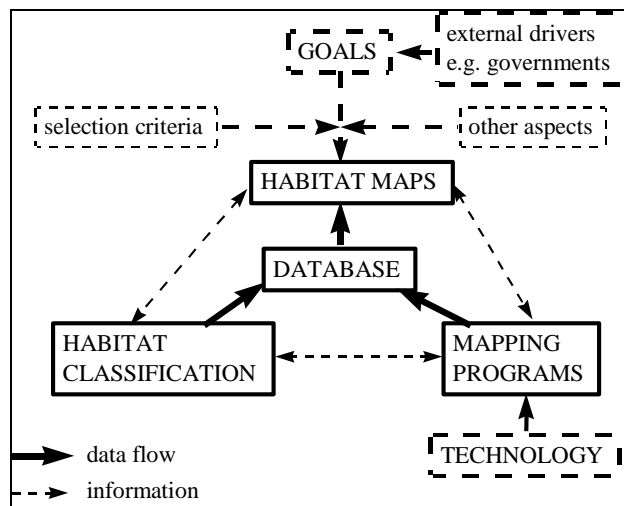
A number of papers gave examples of actual habitat maps, ranging from small areas to very large areas, and generally based on benthic classifications. In five papers actual habitat classifications, meant for broader use, were proposed. Three proposals were situated in the European waters. These were all comparable on a higher-scale level and were consistent with the EUNIS classification, which is being developed for the European Union for use in most parts of Europe, e.g. in framework of the EU Habitat Directive. The Biomar classification system, made for the United Kingdom and Ireland, gives links to human impact on marine habitats. One classification was described for use in the USA. The basis for this was a division into five levels (at different map scales) from megahabitats (ca. 100 km) to microhabitats (ca. dm), with the classification constructed from an understanding of gross geomorphological features and processes. This is in contrast to the EUNIS-type classification where geomorphological features can be used as a second type of classification only by aggregating combinations of actual habitats. One classification was made for use on a world wide scale and mainly based on the pelagic system, although links were made to the benthic system as well. Further investigations are needed to establish whether both systems can be considered compatible with the European (EUNIS-based) classifications, e.g., with respect to the biogeographical aspects. The present proposal for an EUNIS pelagic classification is based on another approach.

At the end of the session, a paper was presented which looked at future developments in habitat classification and mapping within the framework of ICES. In this paper it was concluded that this was a rapidly developing field with increasing demands being made by regulatory authorities for the development of tools. Much work still has to be done for which ICES could provide a useful forum, especially in promoting a baseline classification that can be used for the entire North Atlantic region.

Discussion

The whole system of habitat classification and mapping may be pictured as in the following figure, with the type and level of detail of the habitat maps being determined by the goal for which they are made. Data for the maps come via the database from both actual mapping work and classification. There must be a strong interaction

between the three aspects: "habitat maps", "classification" and the techniques and technologies used in mapping programmes. The technologies selected to large extent determine the level of detail which can be mapped. The classification must be one that can be appropriately mapped, and the classification must be relevant to the goals of the mapping programme.



In the final discussion, it was stated that habitat mapping is an important tool for management and conservation of marine areas and marine resources as well as for detecting degradation in biodiversity of habitats.

Points that were discussed with regard to further work included:

- Standardisation/harmonisation of the mapping, classification and GIS techniques used, as well as data storage, is essential;

Documents presented

T:02	C.J. Brown, K.M. Cooper, W.J. Meadows, D.S. Limpenny, and H.L. Rees:	An assessment of two acoustic survey techniques as a means of mapping seabed assemblages in the Eastern English Channel
T:03	D.W. Connor:	The BioMar marine habitat classification - its application in mapping, sensitivity and management
T:04	C. Davies and D. Moss:	The EUNIS habitat classification
T:05	D.J. de Jong:	Ecotopes in the Dutch marine tidal waters – A proposal for a classification of ecotopes and a method to map them
T:06	S. Degraer, V. Van Lancker, G. Moerkerke, M. Vincx, P. Jacobs, and J.P. Henriët:	Intensive evaluation of the evolution of a protected benthic habitat: HABITAT

ICES might be a good organisation to coordinate international efforts in this respect, including a meta-data database of existing data and the need to address standardisation of data formats.

- International cooperation in mapping efforts is needed;
- An internationally accepted classification, to a certain level of detail (e.g., EUNIS level 3 or 4, which is still not species based, but generic), is essential for communication, both between scientists and with politicians and managers;

ICES should pursue a comparison of classification systems working towards a common language for classification within the ICES area. It is important that this include a greater consideration of the dynamic processes influencing benthic and pelagic systems.

- Recently developed acoustic techniques and new techniques in development offer good, and potentially improved, opportunities for habitat mapping on a larger scale. But the users must be aware of the restrictions and limitations on all survey techniques;
- It is important to establish the goals of any habitat mapping initiative so that appropriate technologies and appropriate levels in the classification hierarchy are matched to the objectives of the study.
- *ICES should continue to work with other international groups in the further development of marine habitat classification and mapping, and encourage international collaboration within the ICES area.*

T:07	D.C. Gordon Jr., E.L.R. Kenchington, K.D. Gilkinson, D.L. McKeown, G. Steeves, M. Chen-Yee, W.P. Vass, K. Bentham, and P.R. Boudreau:	Canadian imaging and sampling technology for studying marine benthic habitat and biological communities
T:08	H. Gary Greene, M.M. Yoklavich, V.M. O'Connell, R.M. Starr, W.W. Wakefield, C.K. Brylinski, J.J. Bizzaro, and G.M. Cailliet:	Mapping and classification of deep seafloor habitats
T:09	E. Jagtman:	Marine habitat classification and mapping within ICES: where to go from here?
T:10	A.J. Kenny, E. Andrulewicz, H. Bokuniewicz, S.E. Boyd, J. Breslin, C. Brown, I. Cato, J. Costelloe, M. Desprez, C. Dijkshoorn, G. Fader, R. Courtney, S. Freeman, B. de Groot, L. Galtier, S. Helmig, H. Hillewaert, J.C. Krause, B. Lauwaert, H. Leuchs, G. Markwell, M. Mastowske, A.J. Murray, P.E. Nielsen, D. Ottesen, R. Pearson, M-J. Rendas, S. Rogers, R. Schuttenhelm, A. Stolk, J. Side, T. Simpson, S. Uscinowicz, and M. Zeiler:	An overview of seabed mapping technologies in the context marine habitat classification.
T:11	A. Korolev and M. Fetter:	The mapping of benthic biocenoses in the coastal zone of Latvia.
T:12	R. McHugh:	The potential of Synthetic Aperture Sonar in seafloor imaging
T:13	T. Noji, T. Thorsnes and J.-H. Fosså:	Marine habitat mapping for the Norwegian Sea
T:14	D. Pauly, V. Christensen, R. Froese, A. Longhurst, T. Platt, S. Sathyendranath, K. Sherman, and R. Watson:	Mapping fisheries onto marine ecosystems: a proposal for a consensus approach for regional, oceanic and global integrations
T:15	S. Rolfes, M. J. Rendas and J. Side:	Using autonomous underwater vehicles for seabed habitat mapping
T:16	B.J. Todd, V.E. Kostylev, R.C. Courtney, R.A. Pickrill, and G.B.J. Fader:	New approaches to benthic habitat mapping integrating multibeam bathymetry and backscatter, surficial geology and sea floor photographs: a case study from the Scotian Shelf, Atlantic Canada

THEME SESSION ON MARINE BIOLOGICAL INVASIONS: RETROSPECTIVES FOR THE 20TH CENTURY—PROSPECTIVES FOR THE 21ST CENTURY (U)

Co-Conveners: J. T. Carlton (USA) and D. Minchin (Ireland)

Introduction

This Theme Session looked back at past patterns of exotic species invasions and towards future movements and management during the coming century. The Working Group on Introductions and Transfers of Marine Organisms has been one of the main focal groups in current world affairs in this discipline and it was appropriate that several of the submissions came from the Working Group members and invited experts with whom they have had contacts.

Marine bioinvasions are considered to be one of the main drivers of harmful change to aquatic ecosystems. Numerous invasions of non-native (exotic, non-indigenous) species of aquatic plants, invertebrates, and fish (especially in the past 25 years) have led to numerous economic, environmental, and ecological alterations to many different marine communities.

Conclusions

Multiple, simultaneous human-mediated vectors are in play

Theme Session presentations indicate that there are many vectors that either accidentally or intentionally transport marine organisms around the world. These include:

- (1) primary vectors such as ships' ballast water, ships' hull and sea-chest fouling, aquaculture, the live food trade, the aquarium/pet industries, and fisheries activities such as direct releases and restocking, and
- (2) secondary vectors redistributing and enhancing the ranges of species once they have invaded (smaller coastal vessels, aquaculture stock movements, the movement of fishing nets with entangled organisms, the use of species as bait, etc.).

Several vectors may be operating in a region at the same time. These may cause redistribution of an exotic species thereby enabling it to rapidly colonise a coastline, bay, estuary, or harbour. The existence of multiple simultaneous and serial vectors creates serious management challenges. Most often those species in transport are poorly known and are difficult to control until such time as they become apparent, and then it may become too late for effective management. However, some species movements are well understood and here management may have some success by imposing control measures or treatments. Management of the vectors that distribute the exotic species requires more attention; for example, procedures to remove living organisms from ballast water are urgently needed. The efficacy of many suggested ballast water treatments

needs to be demonstrated further. Currently the management of vectors is a difficult task but is an area where future management techniques will arise. Up-to-date vector surveys that capture the spatial and temporal scales of species flowing into a given country are critical, both to understanding invasion potential and to aid in developing contingency management measures and regulatory regimes.

Understanding the scale of invasions in the 21st century

A strong consensus was reached that invasions—the species involved, where they are appearing, when they are first found, where and when they are spreading—is extensively under-reported. In order to understand the scale of invasions, a better understanding of the numbers of exotic invasions and their vectors, at different scales of movement, would greatly aid prediction and management. The establishment of well-funded, regularly updated websites for international documentation and tracking of bioinvasions would be a key part of this process.

Interrupting and managing vectors

The broadest possible approaches to vector treatment and management must be taken. Theme Session participants emphasised that international co-operation in defining and acting upon vector management protocols would be fundamental in the 21st century to ensure effective precaution. Numerous research groups around the world may be examining potential control and treatment options for given vectors without communication with others, leading to duplication of research effort and lost management opportunities. Equally important is to measure the effectiveness of vector treatments and to produce protocols where this is possible: What are the standards aimed for? What are the objectives of specific vector management and treatment protocols? To what level of control/efficacy are the targets to be aimed? Establishment of an international co-operative vector management network, along with international, measurable standards by which both to set the goals of treatment and to judge the efficacy and effectiveness of treatment methods, is an important goal in the 21st century.

Regulatory frameworks

National and international frameworks for managing invasions should take into account the vectors that bring new species into a country, the vectors that move species once they have arrived, eradication or control of invasions once they have become established, and mitigating impacts. Regulations, laws, guidelines, and protocols often fail to cover important vectors; they may

have no protocols for the discovery and tracking of new invasions, offer no or only fragmentary legal methods for controlling or eradicating invasions, and, when legal measures are available, they may rarely be enforced. Updated, broad, and robust regulatory frameworks for the prevention, control, and management of invasions should be a high priority.

Support for taxonomy and systematics

Universal support was expressed for the need to upgrade and advance taxonomic and systematic studies of marine organisms. Available taxonomic expertise is presently at an historical low, seriously undermining efforts to identify species. Understanding the role of vectors in dispersing species, and understanding the scale of new invasions, is very often dependent on the availability of taxonomic expertise. There is a need to develop taxonomic studies in universities and colleges to support the current and future needs in ecological comprehension and biodiversity. Full-term, permanent positions for systematists are needed immediately.

Education and information dissemination

There is a need to increase education about why and how exotic species invasions have costly economic, social, and environmental impacts. The public, public representatives, industry, and journalists generally have a poor understanding of these impacts. With an understanding, these stakeholders can play an important role in expediting control measures. Accurate and easily obtained information must be available if control measures are to succeed. Regular updating of websites that provide useful, practical and informative accounts, such as the results of monitoring studies and management measures, are to be encouraged.

Understanding the actual and potential impacts of invasions

All introduced species have some level of impact (in terms of predation, disturbance, and spatial, trophic and other forms of competition), but few exotics become known to most of society. Invasions can modify fisheries either by severely reducing production or, conversely, by providing additional exploitable resources and may even create opportunities for tourism. Introduced species often cause extensive habitat modification, fundamentally change energy flow by means of predation, competition, and disturbance that can result in a cascade of ecosystem changes often with economic consequences. What are both the short- and long-term consequences of all of these changes? How do we measure short-term impacts and use them to predict long-term impacts? Quantitative, experimental short- and long-term research on the impacts of invasions is fundamental to understanding the role of exotic species that impact the economy and the environment. It is clear that areas colonised in the past, such as major estuaries,

coastal zones, and inland seas, will continue to receive exotic species.

Recommendations

A number of different ICES Working Groups, through co-operative and integrated agendas, can now make substantive, far-reaching contributions to the challenges, problems, and issues of exotic species invasions and their impact on fisheries, other natural resources, and the environment. ICES can play a key role in providing advice on, and in encouraging, guiding, and facilitating, the following initiatives:

- Vector Management: ICES Member Countries should undertake vector surveys that indicate the spatial and temporal scales of species flowing into a Member Country, in order to understand invasion potential and to measure the efficacy of management and regulatory regimes. ICES should continue to work with the EU and the EU directives on fish health, in relation to the movements of fish and fisheries products, via aquaculture, mariculture, or other operations, relative to the potential for accidental bioinvasions. These efforts should include not only pathogens and disease agents, but pest species as well. In addition, controls on living organisms transhipped by air or sea for human consumption should include clear and specific measures that these shipments do not become re-laid or held in the open sea in any manner, including in systems where the water would flow unsterilised into the ocean. ICES should play a key role in this arena to reduce the number of species accidentally transferred through fisheries operations.
- Urgent International Cooperation in the Management of Species Transmission by Ships: A wide range of measures from ballast tank design to sterilisation techniques and port management controls, need to be employed to reduce the risk of exotic species transmission, that includes microbes such as viruses and bacteria, in ballast water. Alternative and effective anti-fouling paint coatings need to be evaluated to seek suitable alternatives for TBT-based coatings, as proposed by a Marine Coatings Board. ICES could endorse and encourage developments that will reduce risks.
- International Cooperative Network of Vector Management: ICES Member Countries should co-operate in the establishment of an international co-operative vector management network, along with the establishment of international standards by which both to set the goals of treatment and to judge the efficacy and effectiveness of treatment methods.
- National and International Regulatory Frameworks: ICES Member Countries should place the highest priority on the updating, broadening, and strengthening of regulatory frameworks for the

prevention, control, and management of invasions. ICES should continue to work with the IOC and EU to accelerate and provide support necessary for the management of ballast water and sediments, in particular.

- Assessing Invasion Impact: ICES and its Member Countries should emphasise the need for quantitative experimental research on the impacts of invasions, relative to both short-term and long-term patterns and processes, in order to understand the role of exotic species invasions in impacting the economy and the environment.
- The Fundamental Importance of Supporting Taxonomy and Systematics: ICES and its Member Countries can play a critical global role in the 21st century to re-establish and revitalise the sciences of taxonomy and systematics. All of biological oceanography, fisheries science, natural history,

biogeography, ecology, environmental studies, and evolutionary biology, among other disciplines, rely entirely on the level of sophistication of the taxonomy and systematics that seek to define the organisms under study. Despite this, and despite a profound late 20th and early 21st century interest in biological diversity, serious support for encouraging biologists to work in the fields of taxonomy and systematics is minimal. Every effort should be made to develop such support. An ICES Working Group, symposia, theme sessions, or other avenues or devices devoted to this effort would be a significant contribution to this effort.

- Information Collection and Dissemination: ICES Member Countries should co-operatively facilitate the establishment of well-funded, regularly updated Websites for the international documentation and tracking of bioinvasions, and for the public dissemination of information on bioinvasions.

Documents presented

U:01	<i>A.A. Cangelosi and I.T. Knight:</i> Comparing the bioeffectiveness of ballast water treatments
U:02	Withdrawn
U:03	<i>N.C. Eno and J.P. Hamer:</i> The nature conservation implications of marine biological introductions
U:04	<i>K.Essink and Rob Dekker:</i> Invasion ecology of <i>Marenzelleria</i> cf. <i>wireni</i> (Polychaeta; Spionidae) in the Dutch Wadden Sea
U:05	Withdrawn
U:06	<i>O. Floerl and G.J. Inglis:</i> Marine bioinvasions: quantifying the potential of a transfer vector by analysing its relationship with the donor region
U:07	Withdrawn
U:08	<i>C. L. Hewitt:</i> Marine biological invasions in Australian coastal waters: current status and future trends
U:09	Withdrawn
U:10	Withdrawn
U:11	Withdrawn
U:12	<i>D. Masson et al.:</i> Ballast water research in France: current status
U:13	<i>D. Minchin:</i> A conceptual approach for management of exotic species; modes of life, time-tunnels and exotic species cells
U:14	<i>E. N. Naumenko and Yu.Yu. Polunina:</i> New Cladocera species- <i>Cercopagis pengoi</i> (Ostroumov, 1891) (Crustacea) in the Vistula lagoon on the Baltic Sea. (presented by E. Karazova)
U:15	<i>H. Ojaveer, S. Gollasch, S. Olenin, V. Panov, and E. Leppäkoski:</i> Distribution and ecosystem impacts of exotic species in the Baltic Sea.
U:16	<i>H. Ojaveer, M. Simm, A. Lankov, and A. Lumberg:</i> Consequences of invasion of a predatory cladoceran
U:17	<i>G. Relini, M. Relini, and G. Torchia:</i> Fish population changes following the invasion of the allochthonous alga <i>Caulerpa taxifolia</i> in the Ligurian Sea (NW Mediterranean)

- U:18 *S. Sheffer, E. Geffen, and A. Abelson*: The invasion of Red Sea species to the Mediterranean Sea: defining invasion mechanisms by assessment of transport modes and routes
- U:19 *S.D. Utting*: Introductions of molluscan shellfish – past experience and future considerations
- U:20 *G. van der Meeren, I. Kees O. Ekeli, K.E. Jørstad, and Svein Tveite*: Americans on the wrong side – the lobster *Homarus americanus* captured in Norwegian waters
- U:21 Poster *S.A. Kuzmin*: Spreading of snow crab *Chionoecetes opilio* (Fabricius) in the Barents Sea
- U:22 Poster *Inger Wallentinus*: Introduced macrophytes – do they have as large an impact on the ecosystem and fisheries as animals?

THEME SESSION ON TROPHIC DYNAMICS OF TOP PREDATORS: FORAGING STRATEGIES AND REQUIREMENTS, AND CONSUMPTION MODELS (Q)

Co-Conveners: H. Gislason (Denmark), K.T. Nilssen (Norway), and M. Tasker (UK)

Introduction

The predation caused by marine birds, mammals and large piscivorous fish have previously been shown to have a considerable potential impact on the biomass and population dynamics of their prey. However, the importance of predation for the structure and function of marine ecosystems is still not fully understood. It is thus uncertain to what extent the predation at the top of the marine food web cascade down to lower trophic levels in the same way as it has been demonstrated in freshwater lakes. There are cases where changes in the abundance of a marine top predator have altered the food web completely. However, in most cases the effects have been less apparent, either because the changes in the abundance of the predators had a less dramatic impact, because the changes were masked by simultaneous changes in the environment, or simply because insufficient data were collected to demonstrate what happened.

We know that the predators influence the behaviour of their prey. A fish will modify its foraging and social behaviour in the presence of a predator and many species have means to avoid being eaten. It is, for example, generally believed that this is the major reason why schooling behaviour has evolved. However, schooling will not only affect the interaction between the top predators and their prey. It will also impact on lower trophic levels. It is thus likely that the patchiness we observe in the sea is generated both by spatial differences in productivity at lower trophic levels and by the race at higher trophic levels between the predators and their prey to eat without being eaten.

Top predators often exploit the same prey species as are harvested by fisheries. In many areas the amount of commercial fish removed by top predators equals or exceeds that removed by man. Previous work within ICES, such as the work in the ICES Multispecies Assessment Working Group and the Working Group on Seabird Ecology, has helped quantify the size of this interaction by combining field studies of diet composition and spatial distribution with estimates of food intake. However, the diet and food intake of top predators is difficult to estimate in the field and the information necessary to extrapolate the samples to the population is often missed. Ultimately quantitative predictions of how changes in fishing pressure affect the food intake, growth and population dynamics of the predators competing with the fishery should be made. However, to do so will require improved understanding of the feeding biology of the predators and, in particular, on how they change their spatial distribution in relation to their prey.

The purpose of the Theme Session was to present research that can help us to understand of the role of top predators in marine ecosystems. Important issues include:

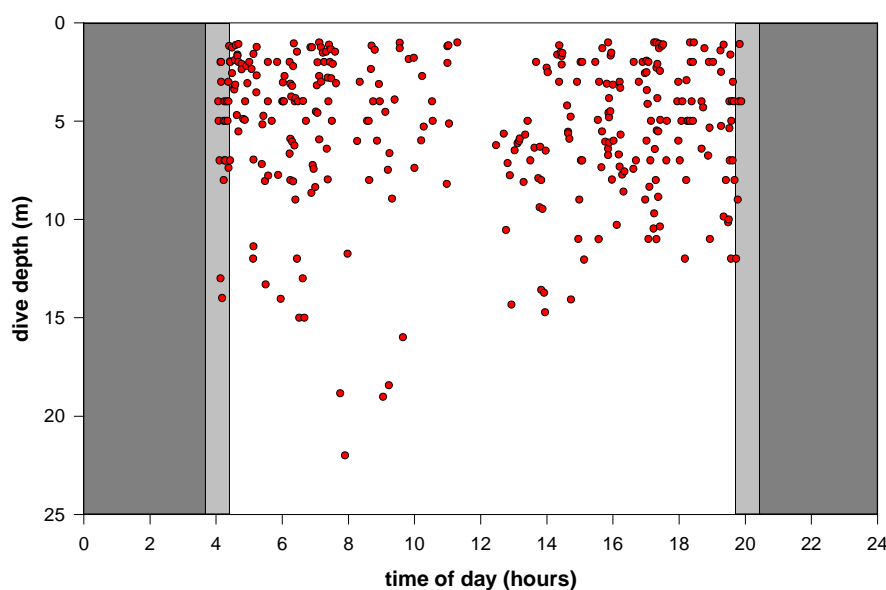
- the diet, energy requirements and total consumption of top predators;
- the seasonal, annual and spatial variation in abundance and distribution of predators compared with their prey;
- prey selectivity, and responses to changes in prey abundance.

Presentation of papers

Eleven oral papers were presented during two sessions over two days. Among these one dealt with food web modelling, five with piscivorous fish, three with seabirds and two with marine mammals.

The papers relating to fish described techniques for estimation of their food intake (Doc. Q:12), estimates of total prey consumption (Docs. Q:02 and Q:11) and how environmental parameters and stomach fullness influenced the growth and maturation of Baltic cod (Doc. Q:10). Results of applying data storage tags to study the movements and activity of North Sea cod demonstrated that the activity of cod changes considerably over the season with active periods in spring and autumn and a period of rest during summer (Doc. Q:09). The differences between the food webs in the Eastern and Western Bering Seas were analysed from the food composition of the higher trophic levels (Doc. Q:05). Doc. Q:03 described the impacts of natural and fisheries induced changes in food availability on seabird breeding success and the influence of discarding on the interactions within the seabird community. Docs. Q:04, Q:08 and Q:07 dealt with food selection and foraging behaviours. Doc. Q:04 used data storage tags to study the foraging tactics of gannets, and the accompanying figure (below) from the presentation shows how detailed information on the diving depth of the birds can be derived from such tags. Doc. Q:01 used GIS to integrate an energetic population model with the habitat use of harbour seals and their interaction with the fisheries.

The two posters on the food selection of hake and the food composition of western Pacific minke whales (Docs. Q:13 and Q:14) were briefly presented at the end of the first session.



General discussion and summing up

The food composition and food intake of predators depend on a number of factors that vary in space and time and the Theme Session identified a need for the development of models to integrate the information from stomach samples with information about the distribution of the predators and their prey. Despite advances in gastric evacuation and metabolic models there is a need for further studies to explain the difference in the food intake calculated by the two types of models. It was recommended to do sensitivity analysis in the models. It was discussed if data based on small sample sizes, in

particular on marine mammals, give enough information to be used in consumption models. However, diet data obtained from small sample sizes of minke whales in the Barents Sea showed variations in the diet, both in space and time, which were correlated with changes in prey abundance.

Conclusion

It was concluded that there was a need for additional work on feeding behaviour to improve the estimation of the impact of predator and prey populations.

Documents presented

Q:01	Arne Bjørge, Trine Bekkby, Vegar Bakkestuen, and Erik Framstad:	Harbour seal <i>Phoca vitulina</i> habitat use and interaction with fisheries as explored by a combined GIS and population energetics model
Q:02	A.V. Dolgov:	Feeding and food consumption by the Barents Sea predatory fishes in the 1980-90s
Q:03	Robert W. Furness:	Impacts of fisheries on seabird community stability
Q:04	Stefan Garthe and William A. Montevecch:	Foraging strategies of seabirds: the northern Gannet (<i>Sula bassana</i>) as a model
Q:05	Viktor Lapko, Kerim Aydin, Vladimir Radchenko, and Patricia Livingston:	A comparison of the Eastern and Western Bering Seas as seen through predation-based food web modelling
Q:07	Ulf Lindstrøm, Alf Harbitz, Tore Haug, and Torstein Pedersen:	Foraging behaviour of minke whales (<i>Balaenoptera acutorostrata</i>) in the southern Barents Sea
Q:08	W.A. Montevecchi and G.K. Davoren:	Prey selectivity, capelin and inter-annual variation in the diets of common murre chicks in the Northwest Atlantic

Q:09	D. Righton, K. Turner, and J.D. Metcalfe:	Behavioural switching in North Sea cod: implications for foraging strategy?
Q:10	D.J. Uzars, T. Baranova, and E. Yula:	Variation in environmental conditions, feeding and growth of cod in the Eastern Baltic
Q:11	F. Velasco and I. Olaso:	Hake food consumption in the southern Bay of Biscay estimated from a gastric evacuation model
Q:12	F. Velasco, J. Riis-Vestergaard, L. Hill, and I. Olaso:	Food consumption of European hake (<i>Merluccius merluccius</i>) estimated by application of a bioenergetics model: Is the growth of hake underestimated?
Q:13 Poster	L. Hill and M.F. Borges:	A comparison of the seasonal abundance of hake (<i>Merluccius merluccius</i>) and its main prey species off the Portuguese coast
Q:14 Poster	Tsutomu Tamura and Y. Fujise:	Geographical and seasonal changes of prey species and prey consumption in the western North Pacific minke whales

THEME SESSION ON THE APPLICATION OF EXPERIMENTAL LABORATORY STUDIES TO FISHERIES SCIENCE (R)

Co-Conveners: J. Schou Christiansen (Norway) and J.G. Pope (Norway)

Rationale

Developments in experimental studies have made their results of greater direct applicability in the development of biological models and in the interpretation of field data. Moreover, developments in computer power and consequent development of modelling possibilities, for example individual based models (IBMs) increase the ways in which such data are needed and the ways in which they can be utilised.

Overview

The work reported was concerned with major areas of experimental work concerning aspects of egg production and aspects of egg viability (Docs. R:09, R:05, and R:11), larval development and with associated models. (Docs. R:02, R:04, R:07), factors influencing survival of young fish (Docs. R:08, R:09, R:11, and R:12), and factors influencing the survival of adult fish (Doc. R:01).

The papers made clear that techniques for the successful handling of larvae had increased to the level where it is possible routinely to study questions of growth and feeding. These results can find immediate applicability in the construction of models and also in the interpretation of field samples.

Studies of egg production and of maternal effects on egg characteristic and survival are also clearly important in improving our definition of the egg production-recruitment process. They also help in defining what may be (in the Baltic at least) critical aspects of buoyancy which affect the eggs ability to be successfully hatched in low salinity waters.

Studies of deterioration in condition factor under starvation conditions allowed field observations from low temperature stocks to be interpreted.

General discussion

Most speakers agreed on the usefulness of experimental studies in informing both modelling and field observations though the high price of such studies on a per species basis was cited as a possible down side. Most saw the need for more integrated studies that encourage the active collaboration of experimenters, modellers (both biological and physical) and field observers in the understanding of marine populations. While there were encouraging signs that this was beginning to happen (seemingly partly as a result of EU and other funding) there was still a real need to overcome the mental and organisational barriers to this collaboration that seem to exist within institutions and within ICES.

Documents presented

R:01	Jean-Denis Dutil, Y. Lambert, and D. Chabot:	Estimating natural mortality of wild cod from controlled feeding and starvation experiments conducted in the laboratory
R:02	Øyvind Fiksen, Erling Otterlei and Arild Folkvord:	Experiments and models as reciprocal tools to understand environmental links in recruitment dynamics
R:04	Hans Høie, Arild Folkvord, and Arne Johannessen:	A multivariate analysis of condition of herring larvae from different environmental conditions
R:05	Anders Nissling, Lars Westin, and Olle Hjerne:	Spawning success in relation to salinity of three flatfish species, Dab (<i>Pleuronectes limanda</i>), plaice (<i>Pleuronectes platessa</i>) and flounder (<i>Pleurone flesus</i>), in the brackish water Baltic Sea
R:07	Tone Rasmussen, Michala Aschan, and Jørgen Schou Christiansen:	The implementation of laboratory studies to shrimp recruitment modelling - a brief review of experimental procedures
R:08	Terje Svåsand, A.M. Ajiad, G.R. Carvalho, C. Clemmesen G. Dahle, L. Hauser, W.F. Hutchinson, T. Jakobsen, O.S. Kjesbu, E. Moksness, H. Otteraa, H. Paulsen, D. Schnack, P. Solemdal, and A. Thorsen:	Demonstration of maternal effects of Atlantic cod: Combining the use of unique mesocosm and novel molecular techniques - A new EU-project

R:09	P.R. Witthames, T.E. Andersen, and O.S. Kjesbu:	The application of tank experiments to the study of reproductive potential in teleosts using <i>Gadus morhua</i> as a test model
R:11 Poster	Lars Vallin and Anders Nissling:	Maternal effects on egg size and egg buoyancy of Baltic cod, <i>Gadus morhua</i> - implications for stock structure effects on recruitment
R:12	Nils Chr. Stenseth, Jakob Gjøsæter, Kyrre Lekve, and Arnoldo Frigessi:	Modeling the population dynamics of cod along the Norwegian Skagerrak coast: what we need to understand better before we have a reliable population model

THEME SESSION ON DOWNTURN IN NORTH ATLANTIC SALMON ABUNDANCE (Y)

Co-Conveners: J. Ritter (Canada) and A. Isaksson (Iceland)
Rapporteur: N.Ó. Maoiléidigh (Ireland)

Background

R.M. Cook, Chair of Consultative Committee explained the background of the Session. He stated that ICES is concerned that North Atlantic Salmon issues are adequately dealt with within the new Committee structure recently adopted by ICES. He hoped that the conclusions of the Theme Session would help ICES improve dialogue on salmon issues.

Presentation of papers

Doc. Y:07. Description of the events in 1999 relating to catch, gear, effort and exploitation were outlined. The processes leading to the provision of catch advice were described and the catch advice relative to the attainment of agreed biological reference points were presented.

Doc. Y:03. Changes in the composition of catches and stocks in Iceland were outlined in relation to management of the resource. Significant reductions in catch were noted due to the closure of the salmon ranching industry that accounted for a large proportion of the reported catch prior to 1997. As the definition of ranching presupposed the capture or harvest of all the returning fish, the present system of ranching to the rod had been reclassified as a rod fishery enhancement programme rather than ranching as it was not possible to harvest all returns by rod and line. In general wild Icelandic salmon stocks were reported to be in a reasonable state, although concerns were expressed at the decrease in proportion of 2-sea winter (2SW) returns.

Doc. Y:08. While the current status of north Atlantic salmon stocks was poor, NASCO was satisfied that significant changes had come about in the regulation of salmon stocks internationally, which were contributing to the conservation of the stocks. This was particularly the case for Greenland where the quota had been reduced by 99%. The use of the Precautionary Approach in relation to salmon fisheries was described and progress in the implementation of elements of this approach were reported. The need for scientific advice in the adoption of any pre-agreed procedures for managing stocks was highlighted. The main question remaining to be answered was why stocks were not responding positively to significant reductions in catch and effort. The establishment of a Working Group on "Estimating Mortality at Sea" was also reported which would be held in Norway in November 2000 to address the requirements for a collaborative research programme.

Doc. Y:01 (Keynote address). Major changes in Pacific salmon stocks had occurred which coincided with large-scale oceanic regime shifts. This manifested in large increases in catches of all Pacific salmon species from

the mid-1970s with a concurrent reduction in body size. The possible influence of biogeographic variations in food web structures with micronekton squid as a keystone species was cited as a possible contributor to interannual variation.

Doc. Y:04. A decline in indices of marine mortality was shown and it was suggested that the rod catch data could be used to look at underlying causes of marine mortality over an extended period. The importance of considering run timing characteristics of various stocks, which are genetically linked, was emphasised when management decisions were being made.

Two poster presentations (Doc. Y:05 and Y:06) were also considered.

Discussion on presentations

In relation to the summary of the Report of the North Atlantic Salmon Working Group (Doc. Y:07), it was pointed out that the spatial extent and diversity of the North Atlantic salmon resource was the broadest for any fish species being monitored and assessed by ICES. In relation to the national stocks and recruitment analysis described in the presentation, it was further suggested that amalgamating the indices from combined stocks was not inappropriate as this was carried out for many marine stocks. There were numerous examples of single stock S/R relationships for North Atlantic salmon that could be used to examine the integrity of the national models. In relation to PFA, it was noted that this index increased by 100% during the period 1978 to 1980 and it should be possible to associate this change with environmental signals, thus providing a mechanism for fine-tuning other signals within the PFA time series.

It was noted that Pacific salmon data in 1999 provided one of the highest indices of oceanic regime shift. Consequently, if the theory that food web structures with micronekton squid as a keystone species are influenced by oceanic conditions was correct, then significant changes in marine growth and survival of Pacific salmon should be recorded in forthcoming years.

Run timing characteristics were discussed and possible reasons for the early running or spring salmon in many UK and Irish stocks were outlined. These included the possibility that genetic population sub-structuring and adherence to maturation trajectories were involved.

Discussion regarding a salmonid platform within ICES

It was generally agreed that a scientific forum for salmon issues was essential to provide feedback on scientific developments occurring around the world. The theme session format was not appropriate if there was only a short time available split over a number of days, as this was a disincentive to participants.

It was suggested that a Scientific Meeting/Symposium could be established during the time the WGNAS met and in the same location to avoid duplication of effort and to ensure as many actively participating salmon scientists could attend. However, it was pointed out by the chair that the working group meeting was already very long (10 days) and participants may not be willing or able to extend more time.

The question was posed as to why only the North Atlantic Salmon scientists had requested a separate forum. All other fish groups (e.g. demersal, pelagic etc.) were content to work under the auspices of the Living Resources Committee and organise more broadly focused theme sessions or symposia. It was suggested that the freshwater element of the salmon life cycle differentiated the salmon group from other fish groups. There was also a need to broaden this to include other anadromous salmonids issues.

Further suggestions were noted including the lack of a forum not just for salmonids but also for eels. There were now serious concerns relating to the status of eel stocks but there was no established forum to consider the biological issues since the ANACAT committee was dissolved.

The Chair noted that while this was the case, ANACAT did not deal with eel issues to any large extent. He suggested that North Atlantic salmon lacked a voice in ICES to recommend specific study groups or theme sessions, which would have wider, appeal and encourage active participation from all participating salmon biologists. He noted that while the Living Resources Committee was a good forum in general, it had limited membership and salmon issues were not well represented.

Proposal for a committee

The participants at the theme session discussed the need to have a salmon platform at the ASC to discuss salmonid related matters and recommend theme sessions, symposia as well as working groups if the need arises. A small subgroup composed of A. Isaksson (Iceland), N.Ó Maoiléidigh (Republic of Ireland), K. Whelan (Republic of Ireland) and A. Youngson (U.K. Scotland) was assembled to formulate a recommendation for a salmonid science committee and provide proper justifications. The group formulated the following recommendation:

“The participants of the theme session on the “Downturn of Atlantic salmon” held in Brugge, Belgium on September 27th and 30th, 2000, recommend that an “Anadromous Salmonid Resource Committee” be established within ICES, which should have the following functions during the Annual Science Conference:

- To be a forum for the exchange views on scientific management.
- To stimulate international scientific cooperation on anadromous salmonid issues.
- To critically review the report of the North Atlantic Salmon Working Group.
- Recommend theme sessions of relevance to salmonid biology and management.
- Recommend study groups, where necessary, to deal with problems related to salmonid biology and management, which are not within the scope of the North Atlantic Salmon Working Group.
- Recommend ICES symposia on salmonid management and scientific issues.

The committee, which meets during or adjacent to the ICES Annual Science Conference, reports directly to the Consultative Committee. The committee’s membership can be composed of current members of the Working Group of North Atlantic Salmon plus up to 2 national delegates from each ICES member country with salmonid interests, representing both scientific and management concerns. The committee elects an independent chair among the national delegates for a term of 3 years, who shall be a salmonid representative of ACFM. The committee’s meetings during the ASC are otherwise open to participants from stakeholders, user groups and international scientific and management organisations. The committee’s recommendations on theme sessions shall be endorsed by the other committees to ensure interdisciplinary considerations and avoid duplication. A salmonid theme session shall, however, be an annual occurrence at the ASC”.

Anadromous salmonid resource committee – a justification

Background

The North Atlantic salmon stock resource has the broadest spatial extent and diversity of any of the marine fish species being monitored and assessed by ICES. This spatial range includes the freshwater habitat where production of salmon occurs. The diversity relates to the presence of unique populations in at least 1,500 rivers in the North East Atlantic (not including the Baltic) and over 570 in North America alone. Since the dissolution of the Anadromous and Catadromous Fish Committee of ICES in 1996, concern has been expressed that scientific issues relating to North Atlantic salmon in particular and anadromous salmonid issues in general,

are not adequately represented within the new ICES committee scheme.

Current Situation

It was expected that the Living Resources Committee would be the main forum within ICES for highlighting and developing salmonid issues with ancillary issues being dealt with by other committees (ACFM for wild salmon, Mariculture Committee for aquaculture etc.).

The present situation is that the North Atlantic Salmon Conservation Organization (NASCO) requests advice annually from ICES on range issues. ICES has established a Working Group on North Atlantic Salmon which meets in April to review these questions and report to ACFM. ACFM then appraises the WGNAS report and provides appropriate advice to NASCO for their annual meeting in June each year. This meeting deals principally with quota setting for high seas fisheries of Greenland and Faroes. Only limited time in the margins is available to fully explore the implications of the WGNAS report or the ACFM report or discuss new or developing issues. Although NASCO may establish specific working groups or meetings to review and develop guidelines and protocols on major issues, it is vitally important that ICES responds positively by providing a meaningful format to address the scientific issues.

Suggested approach

The living Resources Committee has not drawn wide participation from active salmonid scientists and therefore appears to provide less scope for dealing with salmonid issues than previously. There is an apparent lack of involvement from salmon scientists in the present committees and limited response and support for theme sessions of the various committees at the Annual Science Conference. A specific forum for salmonid issues was felt to be an alternative option. This would encourage participating scientists to attend the ASC and to become involved with the process of developing theme sessions of relevance to them while maintaining ICES principles of providing quality scientific advice on scientific issues and promoting greater co-operation between disciplines.

Specific considerations

ICES could consider the following:

- Provision of a forum to discuss implications or developing issues at the ICES Annual Science Conference including a wider peer review of the WGNAS report and the ACFM advice.

- A specific forum for developing and proposing specific study groups to address scientific issues outside of the remit of the WGNAS.
- A similar forum for developing theme sessions for the ICES ASC.

General conclusions and summing up

As suggested in the opening remarks the session was not well supported by active salmon scientists. Possible reasons suggested were:

- The topic area was too broad.
- The lack of a scientific platform for salmon within the ICES Annual Conference after the dissolution of the ANACAT Committee which may have led to an apparent lack of interest or restricted funding for participation in international fisheries fora.

Despite this the presentations covering North Atlantic salmon clearly highlighted the significant downturn in salmon abundance implicit in the Theme Session title. Further insights into the possible underlying reasons for this decline were provided in the keynote address on Pacific salmon where indications are that fluctuations in abundance can in part be attributed to determinable changes in food availability. Similar studies should be encouraged for North Atlantic salmon.

A justification and proposal for the establishment of new committee to focus North Atlantic salmon issues were developed during the ASC for consideration by the Consultative Committee. It is hoped that this will resolve some of the problems, which have manifested with regard to representation of salmon issues at ICES.

Proposed theme sessions for ICES ASC 2001 and 2002

It was proposed that ICES be encouraged to hold a Theme Session on "Developing Salmon Conservation Limits – Recent Progress and Reviews".¹

¹ This topic has been included in the 2001 Annual Science Conference Programme (Session Code: M) with N. O'Maoileidigh (Ireland) as Convener.

Documents presented

Y:01	<i>Kerim Aydin</i> : ENSO and regime-scale variation in the biogeography of Gulf of Alaska micronekton as a driving mechanism for observed growth trends in Pacific salmon
Y:03	<i>Arni Isaksson</i> : Status of Icelandic salmon stocks
Y:04	<i>A.F. Youngston, R.J. Fryer, and J.C. MacLean</i> : Rod catches as indicators of abundance in the Scottish salmon fisheries
Y:05 Poster	<i>Gloria Blanco, Y. Borrell, E. Vázquez, and J.A. Sánchez</i> : Microsatellite variation and estimation of genetic relatedness in Atlantic salmon
Y:06 Poster	<i>José Sánchez, M.D. Ramos, H. Pineda, Y. Borrell, E. Vázquez, and G. Blanco</i> : The application of genetic variation at microsatellite loci in Atlantic salmon (<i>Salmo salar</i> L.) stock identification
Y:07	<i>N.Ó. Maoiléidigh</i> : ICES Working Group on North Atlantic Salmon – Stock Status and Summary
Y:08	<i>M. Windsor and P. Hutchinson</i> : Recent developments in salmon conservation through international cooperation in NASCO

THEME SESSION ON SUMMARY MEDIUM-TERM FORECASTS IN DECISION-MAKING (V)

Co-Conveners: K. Patterson (Belgium) and P. Sandberg (Norway)

Introduction

The Theme Session was intended to explore the usefulness of medium-term forecasts to decision-makers, as well as to explore the scientific challenge in producing such forecasts.

For many stocks, ICES conventionally calculates a medium-term forecast based on a single point-estimate or «best VPA». Standard population dynamic assumptions are then applied under a range of exploitation constraints to evaluate the consequences that alternative harvest decisions may have in terms of future catches, spawning biomass, and the risks that particular reference points may be crossed.

Summary of presentations

The issues of the appropriateness of the population dynamic assumptions in the forecasts were addressed in a number of papers. Some authors noted the dependence of stock dynamics on external forcing factors, such as the effect of North Sea water inflows to the Baltic (Doc. V:02); predation effects in a cod-herring-capelin system (Doc. V:04) environmental régimes (Doc. V:05) and stock-specific condition factors affecting recruitment processes (Doc. V:07).

An important factor determining the outcome of a medium-term projection exercise is the choice of appropriate starting point, in terms of structural model and recruitment assumptions. Some assessments are very sensitive to such choices, but no framework in the ICES advisory system currently exists to represent this sort of uncertainty (Docs. V:01 and V:10; see also Doc. W:06).

Issues of sensitivity and accuracy of methods for estimating uncertainty were addressed in Docs. V:03 and V:08 respectively. Uncertainty estimates in three case studies were found to be sensitive to statistical methodological assumptions to the extent that biomass corresponding to distributional percentile points in the range 25 to 75% would be different by about 20% in biomass according to the method used (Doc. V:03). Accuracy was addressed in Doc. V:08 which indicated that reasonably accurate probability statements can be calculated, provided that bias-corrections are used and that the structural model is correct.

Overall performance of ICES medium-term projection methodology was addressed in Doc. V:06, which concluded that statements about absolute probability levels are both very biased and very inaccurate. Use of such methods is recommended only for comparing risk levels of different harvest strategies.

Three papers were presented with a focus that was very specific to particular stock situations, and due attention should be given to these papers in the relevant assessment working groups (Docs. V:09, V:12, and V:11).

Key issues identified

After discussion the following key issues were identified:

Managers are presently using the probability levels provided by ICES in medium-term forecasts for making decisions. These have been found to be useful in shifting attention onto strategic issues rather than the annual setting of TACs. It was argued that extension of forecasting to economic factors and the inclusion of more fleet detail about operations in multispecies fisheries would be helpful.

However, the probability or risk levels provided by ACFM are not very well supported by the present state of the science, because:

- a) Methods are not generally tested
- b) They do not include the entire science base (e.g. multispecies and ecosystem modelling)
- c) The low probability levels, often used as the basis for decision making, are sensitive to methodological assumptions.
- d) Methods in current use are not bias-corrected, and the relationship of distributional assumptions to point estimates is unclear.
- e) The appropriate choice of structural model is not obvious, nor is the way to communicate such uncertainty
- f) The medium-term and uncertainty estimation methods perform very poorly in consistency tests.

However, some positive features of the methodology could be identified:

- a) The science base can eventually be extended; multispecies and multifleet data and evaluations do exist.
- b) Simulations indicate no systematic methodological failure. Some further attention to detail in modelling distributions and presentation of point estimates is needed.
- c) Estimation of some parameters with some models does seem to work at present, so there is not a total failure of the approach. Rather refinements in statistical assumptions are needed.

- d) Relative risks in terms of biomass trends can be described, although risk statements about absolute stock size cannot reliably be provided.

Documents presented

V:01	Bjarte Bogstad, Ingolf Røttingen, Per Sandberg, and Sigurd Tjelmeland:	The use of Medium-Term Forecasts in advice and management decisions for the stock of Norwegian spring spawning herring (<i>Clupea harengus</i> L.)
V:02	Tenno Drevs:	On the flounder yield and spawning stock medium-term forecasts in Estonian waters
V:03	Stratis Gavaris, K.R. Patterson, C.D. Darby, P. Lewy, B. Mesnil, A.E. Punt, R.M. Cook, L.T. Kell, C.M. O'Brien, V.R. Restrepo, D.W. Skagen, and G. Stéfansson:	Comparison of uncertainty estimates in the short term using real data
V:04	Johannes Hamre:	Effects of climate and stocks interactions on the yield of north-east arctic cod. Results from multispecies model run
V:05	C.L. Needle, C.M. O'Brien and C.D. Darby, and M.T. Smith:	The use of recruitment time-series structure and environmental information in medium-term stock projections
V:06	K.R. Patterson, R.M. Cook, C.D. Darby, S. Gavaris, B. Mesnil, A.E. Punt, V.R. Restrepo, D.W. Skagen, G. Stéfansson, and M. Smith:	Validating three methods for making probability statements in fisheries forecasts
V:07	H.-J. Rätz, J. Lloret, J. Casey, A. Aglen, S.A. Schopka, L.O'Brien, and P. Steingrund:	Variation in fish condition between Atlantic cod (<i>Gadus morhua</i>) stocks and implications for their management
V:08	Victor Restrepo, K.R. Patterson, C.D. Darby, S. Gavaris, L.T. Kell, P. Lewy, B. Mesnil, A.E. Punt, R.M. Cook, C.M. O'Brien, D.W. Skagen, and G. Stéfansson:	Do different methods provide accurate probability statement in the short term?
V:09	V.L. Tretyak:	Modelling of age-dependent instantaneous coefficients of natural mortality for Northeast Arctic cod
V:10	D.A. Vasilyev:	Triple-separable VPA (TSVPA) or a stone to bridge the gap between separable cohort models and nonseparable ones
V:11	D.A. Vasilyev, S.V. Belikov, and A.I. Krysov:	Blue whiting: results of stock assessment using filtered catch-at-age-data
V:12 Poster	A. Pérez, A. Aubone, M. Renzi, A. Madirolas, M. Ehrlich, G. Irusta, and M. Simonazzi:	Overfishing indications in the hake (<i>Merluccius hubbsi</i>) stock south of 41 S. southwest Atlantic Ocean

THEME SESSION ON CO-OPERATIVE RESEARCH WITH THE FISHING INDUSTRY: LESSONS LEARNED (W)

Co-Conveners: G. Chouinard (Canada) and P. Rago (USA)

Introduction

In recent years there have been a number of co-operative research initiatives between fisheries scientists, managers, and the commercial fishing industry. As research budgets become more limited, and information needs expand, and as the fishing industry and environmental community seek a greater voice in the scientific debate, these collaborations are expected to increase further. During this Session, a review of what has been learned from recent collaboration was conducted by examining case studies from both inside and outside the ICES area. In addition, associated issues such as the use of very different types of information in resource evaluations, standardisation and consistency in methods, data quality and credibility, and the utility of co-operative research in improving the understanding of the role of science for fisheries management were considered.

Presentation of papers

Fifteen papers, ranging from the philosophical to the practical, were presented during the session. Many of the co-operative research projects were very recent (e.g., Docs. W:04 and 11) whereas others had been in place for some time (e.g., Doc. W:17). Some papers reported the results of research projects with a few vessels (Doc. W:11) while others described long standing partnerships involving tens to hundreds of vessels (Docs. W:05 and 07). On the whole, the presenters painted a positive picture of co-operation with the fishing industry and highlighted the improved insights from these research projects.

Co-operative projects begin in a variety of ways. Many projects have been initiated when resource conditions change rapidly. Large year-classes of haddock (Doc. W:05), rapid increases in scallops in closed areas (Doc. W:13), and declines in halibut (W:20) are examples. In other cases the co-operative projects have been developed for species that are difficult to assess, are only recently exploited (Doc. W:01), offer promise of a new fishery (Doc. W:04) or those for which no standardised assessment methods exist. Four of the papers described studies on pelagic species (Docs. W:02, W:10, W:16, and W:17), three on deepwater species (Docs. W:04, W:11, and W:20), or invertebrate species (Docs. W:01, W:08, and W:13) or species caught poorly in normal survey gear (Doc. W:20).

Regardless of how the co-operative research began, nearly all of the papers emphasised the importance of getting the projects off to a good start. This generally entailed defining a realistic scope of work, negotiating roles and responsibilities and developing timetables

(Doc. W:01). Presenters noted that it is important to give ownership of tasks to the experts (Doc. W:20). Scientists should take responsibility for experimental design and analyses; fishers have greater knowledge of the capture process and techniques. Each group needs to understand its role (Docs. W:01 and W:03) but neither group should be resistant to change. Several presenters emphasised the complementary roles of fishers and scientists.

Neither scientists nor fishers should be afraid to develop testable hypotheses and to experiment (Doc. W:13), but it is necessary to maintain a degree of flexibility (Docs. W:01 and W:20). Rigid adherence to the scientific protocols or preconceived notions could blind scientists to new insights (Doc. W:16). Projects often obtain information that would difficult or impossible to obtain any other way (Doc. W:03). By the same measure, involvement of fishers increases their understanding of the scientific method. (Doc. W:07). Similar concerns were expressed with respect to mathematical models. Buy-in to models and their predictions must begin with an understanding of the basic underlying principles (Doc. W:10). The iterative nature of design and execution of studies was evident and the notion of continuously improving designs pervaded many of the papers.

Advanced technology played an important role in many projects. Hourly position reports from the entire scallop fleet made it possible to deduce the likely fishing areas and the response of fishers to regulations (Doc. W:13). "Black boxes" facilitated the collection and interpretation of acoustic information (Doc. W:17). Such devices however, cannot substitute for the presence of scientists and observers on vessels.

Many authors noted quality control and assurance issues. Data collection at sea is difficult under the best of circumstances. Therefore it is important to devise realistic data collection procedures. A need to calibrate methods was noted by several authors (Docs. W:02, W:07, W:11, W:13, W:14, and W:20). Multi-vessel surveys and direct comparisons with existing fishery-independent surveys both require validation (Doc. W:14). Simulation models can play an important role in the design and interpretation of such data (Docs. W:02, W:10, and W:11). Finally, new theories and methods are necessary for the interpretation of these diverse data sources (Docs. W:02, W:06, and W:13).

Many of the long-term institutional frameworks for handling the varied types of data remain to be worked out (Docs. W:01, W:13, and W:17). Most studies are not yet incorporated into traditional databases maintained by government agencies. Ultimately such considerations must come to the forefront if the results of these projects

are to be available to the broader science and industry communities.

The importance of communication was stressed in all of the papers. Fishers and scientists often use jargon that facilitates communication within groups but may discourage it between groups. Frequent communication, both formal and informal, is necessary (Docs. W:17 and W:20). The utility of formal negotiation approaches was noted in Doc. W:01 and Doc. W:05. Informal communication is particularly important because the formal discussions at management meetings are often limited by time or otherwise constrained (Doc. W:05). Rapid feedback is important to prevent small problems from becoming insurmountable ones (Doc. W:01). Development and use of more understandable approaches was advocated (Doc. W:08). Such methods can reduce the complexity to acceptable levels while retaining the essential core of information.

Building trust between groups does not come overnight, particularly if relationships have been tense in the past. Therefore, it is often necessary to validate new approaches in small steps. Several papers noted that it is not necessary to conduct such research with the entire fleet. One-on-one communications and projects often create goodwill throughout the fishing fleet (Doc. W:05).

General Discussion

The presentations were followed by a summary of the main issues and challenges and a general discussion. It was noted that the use of different types of information in resource evaluations resulting from co-operative research with the fishing industry will sometimes require new analysis methods and even new theoretical models. Co-operative research with the industry is not only useful to assist in stock assessments but also to conduct basic biological research and a wide range of fisheries studies (e.g. biological characteristics, technical measures, bio-economic studies). It was remarked that co-operative research should involve more than just industry and be open to all stakeholders. In reality, given that fish stocks are common property resources, the term stakeholders includes all citizens of a nation and beyond.

Standardisation and consistency of methodology were considered to be essential to the success of these initiatives. Where standardisation cannot be achieved (e.g. vessels to be used in surveys), the issue can often be addressed through proper statistical design. In terms of the quality and credibility, validation of the information through other data collection systems (e.g. Vessel Monitoring Systems), fisheries observers or by calibration of the equipment when using acoustic methods is paramount.

A common thread of many of the case studies presented, and reaffirmed in the discussion, was that the co-operative research had played a large role in improving the understanding of the role of science in fisheries

management and fostered a better understanding between the two groups. However, it was noted that many of the collaborative studies were initiated when stocks were at their lowest abundance and that the status of these stocks had subsequently improved; this factor had likely also played a role in improving relations. Nevertheless, in the cases examined and others reported during the discussion, the collaborative initiatives, particularly where Individual Transferable Quotas (ITQs) were involved, had generally created a greater sense of ownership by the stakeholders.

Co-operative research with the industry is not necessarily cheaper and often requires a considerable time investment from the scientists and industry. All of the papers emphasised the additional workload that co-operative research projects put on all parties. The success of many of these programmes has been the result of fishermen and scientists “going the extra mile (or kilometre)” to accomplish difficult tasks. Fisheries institutions and harvesters must invest in the process. However, these costs can be offset by unexpected benefits (e.g. data collected that can be used to examine other issues, greater acceptance of assessment results) that are difficult to quantify.

For these studies to be successful, a structured, yet flexible approach, established at an early stage is required. Frequent exchange of information, transparent communication, an openness to compromise by both parties, a commitment to resolve issues, identification of roles and responsibilities and detailed written agreements are important elements of this approach.

A number of challenges were also identified. They include the management of expectations of all parties. Co-operative research may not necessarily result in improved stock status. Co-operative studies will not always lead to increased harvest but may instead lead to increased fisheries management restrictions. Regardless of the outcome, there was a general sense that such measures would be more acceptable if all parties understood their basis. Fisheries researchers will need to determine to what extent scientific trade-offs are acceptable. It was noted that co-operative research with the fishing industry was a new trend and that it is unclear whether some of the partnerships will be able to survive extremes of stock abundance (either low or high). In terms of the relationship with the industry, there was a concern that this partnership could evolve to produce undesirable results in terms of access to the resource (e.g. greater access to those involved in research?). In that sense, it is important that these initiatives have acceptance from the entire fisheries management system and not just the science arm. The collaboration also raises the issue of data accessibility and ownership by government and industry.

Since structured research collaboration with the industry is fairly recent and a number of challenges still need to be faced, ICES may wish to revisit the issue in a few years.

Documents Presented

W:01	J.A. Boutilier:	Getting to yes with stakeholders in fisheries resource assessment - a paradigm shift
W:02	R.R. Claytor, J. Allard, A. Clay, C. Leblanc, and G. Chouinard:	Fishery acoustic indices for assessing Atlantic herring populations
W:03	P. Durán Muñoz and E. Román Marcote:	Spanish experimental fishings: A cooperative research initiative between scientifics and the local fishing industry
W:04	P. Durán Muñoz, E. Román Marcote, and F. González:	Results of a deep-water experimental fishing in the North Atlantic: An example of cooperative research with the fishing industry
W:05	R.S.T. Ferro, G.N. Graham, and F.G. O'Neil :	A recent UK joint initiative to revise technical conservation measures regulating the design of mobile gears
W:06	K.H.Hauge:	Fisheries scientist's struggle for objectivity
W:07	W.A. Karp, C.S. Rose, J.R. Gauvin, and S.K. Gaichas:	Government-industry cooperative research in the United States. Provisions under the Magnuson-Stevens Fishery Conservation and Management Act and examples from the Gulf of Alaska and the Eastern Bering Sea
W:08	P. A. Koeller:	Co-managing the Scotian Shelf shrimp fishery – so far so green
W:10	J. Menezes, J. Ferreira Dias, J. Cruz Filipe, and J. Gonçalves Dias:	Economics impact of sardine scarcity on the Portuguese canned fish industry: a system dynamics study
W:11	R.D. Methot, J.R. Wallace, and C.W. West:	Introducing a new trawl survey for West Coast slope groundfish
W:13	P.J. Rago, S. Murawsky, K. Stokesbury, W. DuPaul, and M. McSherry:	Integrated management of the Sea Scallop Fishery in the Northeast USA: Research and commercial vessel surveys, observers, and vessel monitoring systems
W:14	A. Salthaug and O.R. Godø:	Analysis of CPUE from the Norwegian bottom trawl fleet
W:16	A. Slotte:	Use of data from the commercial fishing industry in the management of Norwegian spring spawning herring (<i>Clupea harengus</i> L.)
W:17	R. Stephenson, G. Melvin, J. Fife, D. Lane, and D. Aldous:	Cooperative research with the Scotia-fundy herring fishing industry: lessons learned
W:20	K.C.T. Zwanenburg and S. Wilson:	The Scotian Shelf and Southern Grand Banks Atlantic halibut (<i>Hippoglossus hippoglossus</i>) survey - Collaboration between the fishing and fisheries science organisation

THEME SESSION ON FISHERIES MANAGERS AND SCIENTISTS ON THE DEVELOPMENT OF REFERENCE POINTS AND MANAGEMENT SYSTEMS FOR THE FISHERIES AND MARINE ECOSYSTEM (X)

Co-Conveners: G. van Balsefoort (Netherlands), J. Horwood (UK), N.A. Nielsen (Denmark), M. Sissenwine (USA)

Background

The 11th Dialogue Meeting, and the Follow-up meeting in London in early 2000, between ICES and fisheries scientist, fisheries managers, and Client Commissions stimulated a positive and interactive dialogue. An important issue at both meetings was the precautionary approach to fisheries and ecosystem management. This subject is even now involving an increasing technical interaction between fisheries managers and scientists as they mutually seek to identify reference points and ecological issues.

The Theme Session was held in order to address the scientific issues themselves, and even more to bring fisheries managers into the technical debate so that both parties move forward in an informed and constructive manner in this emerging field.

The Session sought contributions from scientists, and fisheries and environment managers, on the practical way forward in addressing these new issues, and the constraints that scientists should take into account when they attempt to develop reference points and management systems, and when they give advice in these contexts.

It was pointed out that the Session was a novel construction in that scientists, fishery managers, and other stakeholders and interested parties were invited to contribute to a Theme Session.

A. Laurec (EC-DGXIV) accepted an invitation to participate in the introduction and discussions.

Presentation of papers

Doc. X:08 gave a review of the process leading to the establishment of limits and precautionary reference points for the stock of Norwegian spring spawning/Atlanto-Scandian herring. The paper emphasises the interaction between the advice on the stock given by ICES (including reference points) and the response from management authorities. The paper demonstrated the recent ACFM policy to use F_{pa} as the precautionary reference points conflicted with the earlier decisions by the regional management body to use a lower reference fishing mortality based on preference for a lower probability of SSB reduction. The subsequent discussion questioned the basis for ACFM to maintain F_{pa} as a proper reference mortality for the stock in question. Others questioned whether the lower F-value was not too high based on historical experiences.

Doc. X:09 reviewed bias and variation in stock assessment based on analysis of retrospective assessments. The overall conclusion was that the bias and variation of the assessments are generally higher than anticipated when developing reference points. A coefficient of variation (CV) of the order of magnitude 0.2 – 0.3 cannot be taken as typical for ICES assessments.

Doc. X:07 described the procedures for establishing a "Wild Salmon Policy" for Pacific Canada and the issues associated with the development of the policy. The paper further described the dialogue between scientists and stakeholders, and implementation issues, such as definition of conservation unit, biological Reference points, and the need for a risk assessment framework.

During the discussion it was clarified that the scientists were largely responsible for orchestrating the discussions on the "Salmon Action Plan" and that there was a strong endorsement from stakeholders to implement the conservation plan. Experience showed that, in order to sustain a fruitful dialogue between scientists and stakeholders, detailed technical and scientific information was required. A general overview did not fulfil the requirements

Doc. X:02 presented an example of a process to complement the ICES advisory functions with stakeholder input. In contrast to having stock assessment undertaken late in the year and subsequent review and formulation of advice to Fishery Commissions allowing only few weeks between each step a new procedure was tested. An "early version" of the assessment was developed early in the year, followed by a two day dialogue meeting with industry. This enabled careful examination of input data and fruitful dialogue between scientists and industry. The paper argued that this procedure strongly improved the dialogue between scientist and industry, and that in some cases it could improve quality. In the discussion, the possibility of including other stakeholders in the preliminary review of the assessment was raised but it was felt that the procedures needed development before the forum for information and dialogue could be extended more widely.

Doc. X:01 gave a fishery manager's view of the need to receive the ICES advice with accessible explanation and carefully prepared presentation. In particular, the introduction of advice in the context of the precautionary approach, in 1998, had caused problems in that it was conceived as being over prescriptive, inconsistently presented to managers, and arrived without wide prior notice. The current role of F_{pa} in advice was questioned.

Since then some improvements had taken place and, for example, the dialogue on medium term strategies had been more efficient. That demonstrated the need for a careful and continuous dialogue. During the discussion it was pointed out that the introduction of the precautionary approach in fisheries had been made difficult by the fact that the principles had been agreed on a very general basis, at a high political level. In fact the principles needed to be made operational before they were usable in practical fisheries management.

Doc. X:04 concentrated on the negative perception by managers and industry of ACFM advice. The paper suggests that this difficulty, to a large extent, is caused by internal inconsistencies and ambiguity in the definition of the biological reference points, and the focus of fishing mortality as the only control variable. Moreover more progressive step-by-step solutions to management problems were requested by managers and the industry. The paper suggests that the current practise of giving one year TAC advice could be replaced with multi-annual management plans. These were more likely to clarify the precautionary approach and socio-economic constraints, especially the stability of yield.

Doc. X:03 presented the paradox between the almost inverse relationship between the complexity of fisheries legislation and the success in halting the depletion of many commercially important fish stocks. It was suggested that meaningful involvement of the fishing industry in the assessment process should be developed in order also to overcome the artificial separation of fisheries administrators and scientists on the one hand, and the fishing industry on the other. The paper gave reference to a number of examples, such as the Irish Sea, where on a regional basis, a recovery plan, consisting of a mix of measures, had been developed as a collaborative enterprise between the fishing industry, managers and scientists. An important alternative to current practice could be regional management coupled with the appropriate institutional setting. During discussion it was asked whether environmental interests should also be included in the institutional setting. Although it was thought a possibility in the future, the author argued that the improved dialogue between the fishing industry and scientists was a first step.

Doc. X:05 gave a number of examples of areas where ocean-atmospheric changes have had a severe impact on fish stocks and fisheries. It was pointed out that such changes were quasi-periodic and operated over time and scale which needed to be taken into account by fishery

scientist and managers when developing reference points. It was pointed out that a particular problem was to detect such changes in the current period. It was argued that the ICES approach to setting precautionary reference points and giving advice on implementation of the precautionary approach may change significantly as it develops to include natural and anthropogenic changes. Therefore ICES needs closer contact in this process with all its stakeholders. The discussion concentrated on the possibility to include natural and anthropogenic factors in the current assessment and advisory procedure. It was argued that it should be possible, based on existing data and knowledge to include this type of information in current practice. However, experience had shown that simple environmental correlations were not acceptable to managers.

Summary

There was insufficient time to draw "conclusions" from the meeting, and so a few common themes are summarised below:

1. This Session attracted a large audience, of about 100. It included scientists, national fishery managers, the EU Commission, fisher's representatives and conservation interests. This, for ICES, is an unusual mix. It stimulated a good debate both at the Session *per se*, but also outside of the meeting. Attracting this wider audience, who are materially affected by ICES' actions, should be seen as a success to build upon.
2. The Session identified several areas where the current ICES implementation of a precautionary approach for fisheries management needed to evolve, improve or be changed. These include *inter alia* the variances used in constructing reference points, the internal consistency of the reference points, the use of F_{pa}, the use of shading in certain areas of the management catch option table, consistency across stocks, and the wider implications of shifts in productivity. Such reference points may need reconsideration in the light of multi-annual management plans.
3. Problems had been experienced in the way the precautionary approach had been introduced into the management advice. It was generally recognised that should the precautionary approach, or reference points change in character, then it should be done in a manner which recognises the legitimate interests of other parties, including managers and fishing interests..

Documents presented

X:01	Sue Brown:	The precautionary approach: a User's View
X:02	R.M. Cook:	Complementing the ICES advisory process with stakeholders input
X:03	Barrie Deas:	Fisherman and scientists: Collaboration as the basis for stock recovery
X:04	François Gauthiez:	Multi-annual strategies: improving stock management and the dialogue between scientists and managers
X:05	Joe Horwood:	Multi-annual strategies: improving stock management and the dialogue between scientists and managers
X:07	Laura J. Richards:	Developing a wild salmon policy for Pacific Canada
X:08	Ingolf Røttingen:	A review of the process leading to the establishment of limit and precautionary reference points for the stock of Norwegian spring spawning herring
X:09	Sigurdur Tor Jónsson and Einar Hjörleifsson:	Stock assessment bias and variation, analyzed retrospectively from ICES quality control sheets, and introducing the PA-residual

THEME SESSION ON EFFICIENCY, SELECTIVITY AND IMPACTS OF PASSIVE FISHING GEARS (J)

Co-Conveners: H. A. Carr (USA) and G. Brothers (Canada)

Introduction

Passive gears (set nets, lines, and traps) are widely used to harvest a range of marine species, but their operation has been less intensively studied than that of active gears. Many passive gear fisheries are large enough to have a significant impact on stocks. Although this gear can operate selectively on target species, there remains a need to improve selectivity and reduce impact. New methods of analysing catch data to investigate efficiency and selectivity are being developed and have advanced the understanding of the operation of these gears. By-catch of unwanted species of fish, mammals and birds in passive gears, including lost gear, is a concern. Recent studies that have involved long-term observations of gear in situ have provided some data on these problems. As the marginal cost of passive gears is relatively low, fishing effort can expand rapidly in over exploited fisheries to maintain catches, and experience of regulating these fisheries is of general interest. A better understanding of passive gear in regards to selectivity, catch per unit effort and impact is required when considering potential management and control.

Presentation of papers

Eleven papers were presented during the one-day session. Six of the papers dealt with gillnet studies; two on size selectivity (Docs J:06 and J:12), three on by-catch reductions (Docs. J:02, J:05, and J:12), and one on ghost fishing (Doc. J:08). Papers were also presented on longline studies (4); three on by-catch reduction (Docs J:01, J:04, and J:10) and one on size selectivity (Doc. J:13). The remaining paper was on tagging and mortality, which related to passive gears (Doc. J:14). Two poster papers were presented that dealt with fish trap selectivity (Doc. J:15) and a gillnet metier (Doc. J:17).

The papers involved three primary themes: selectivity, bycatch reduction, and ghostfishing, which could be summarised as follows:

Selectivity: Presentations examined gear characteristics, such as bait types in the longline fishery and monofilament twine diameter in gillnets. Also considered under selectivity was species morphology in relation to mesh size and shape. A successful solution to species selectivity was noted in the manufacture and use of fabricated bait to reduce the catch of certain species that were under strict management controls.

Bycatch reduction: Issues included assessing the impact of the bycatch of certain fisheries, especially those that related to non-target fish species, seabirds and seals. Passive fishing gear that were of particular concern were

gillnets, longlines, and fish traps. Solutions to some of these problems were identified. One example was the use of bird scaring lines with streamers that sharply reduced seabirds eating bait on hooks when shooting the longline.

This example of success not only reduced seabird bycatch, but also reduced bait loss and increased the targeted catch.

Ghostfishing: This was another topic re-identified as a problem. A method to assess the significance of ghostfishing of gillnets was discussed.

General discussion and summing up

Participants identified where there were solutions to problems presented. Two areas in particular, were the use of fabricated bait to increase species selectivity in the gillnet fishery and the deployment of bird scaring lines with streamers in the longline fishery. The importance of keeping solutions as simple as possible was emphasised. The bird scaring lines are a perfect example of a simple solution.

The participants recognised the increased cost of mobile fishing operations, primarily because of fuel costs, and the general lower expense associated with the use of passive fishing gears. The environmental impacts related with the use of mobile gears as in contrast to the generally more environmentally friendly passive gear was also noted. These issues further justifies the need for increased investigations to improve selectivity, reduce bycatch, and reduce ghostfishing of passive fishing gears. One other concern expressed was the need to standardise methodology and analyses.

Conclusions and proposals

The Theme Session recommended further work in the following areas:

- Crab bycatch in gillnets
- Seabird and marine mammal bycatch in traps and gillnets
- Use of fabricated baits
- Solutions to ghostfishing including technical innovations and education
- Standardisation of study methodology

These topics could be further addressed at an appropriate ICES meeting to determine the level and requirements for further discussion, work, and mitigation.

Documents Presented

J:01	P. Bach, L.Dagorn, and C. Misselis	The role of bait type on pelagic longline efficiency
J:02	A. Bjorge, N. Oien, S. Hartvedt, and T. Bekkby	Dispersal and by-catch mortality in grey, <i>Halichoerus grypus</i> , and harbour, <i>Phoca vitulina</i> , seals tagged at the Norwegian coast.
J:04	D. Erickson, S. Goldhor, and R. Giurca	Efficiency and species selectivity of fabricated baits used in the Alaskan demersal longline fisheries.
J:05	H. Godoy, D.M. Furevik, and S. Lokkeborg	Reduced bycatch of red king crab (<i>Paralithodes camtschatica</i>) in the cod gillnet fisheries in northern Norway. Fishing trails with norsel-mounted gillnets.
J:06	R. Holst, D. Wileman, and N. Madsen	The effect of twine thickness in cod gillnets
J:08	O.-B. Humborstad and D.M. Furevik	Catches of Greenland Halibut (<i>Reinhardtius Hippoglossoides</i>) in ghostfishing gillnets on the Norwegian Continental slope.
J:10	S. Lokkeborg	Review and evaluation of three mitigation measures bird-scaring line, underwater setting, and line shooter – to reduce seabird bycatch in the Norwegian longline fishery.
J:11	F.M.Lucena, C.M.O'Brien, and E.G. Reis	The effect of fish morphology and behaviour on the efficiency of gill nets, their selectivity and by-catch: two examples from southern Brazil.
J:12	T. Mentjes and K. Panten	Relative size and girth selectivity of cod gillnets in the Western Baltic.
J:13	H.O. Milliken, H.A.Carr, H. McBride, and M. Farrington	Selectivity studies in the Northwest Atlantic longline fishery.
J:14	E.Urtans and J.Priednieks	The present status of seabird bycatch in Latvian coastal fishery in the Baltic Sea.
J:15	G. Brothers	Testing square mesh panels in trap nets to reduce the catch of juvenile Atlantic cod.
J:17	G.A.Petrakis, A.Chilari, and A. Terrats	Gillnet metier of blackspot seabream in the Ionian Sea.

THEME SESSION ON INCORPORATION OF EXTERNAL FACTORS IN MARINE RESOURCE SURVEYS (K)

Co-Conveners: E.J. Simmonds (UK), P. Petitgas (France), and S. Walsh (Canada)

Introduction

Many external factors have various degrees of impact on marine resource surveys and can be summarised into three broad categories:

- Fish behaviour: aggregation and distribution; vessel avoidance; reaction to gear.
- Environment: weather: water movements; sea temperature; visibility; light.
- Sampling gear characteristics: tow duration; towing speed; gear size; ground contact; mesh sizes.

Most of these factors are not addressed in the design and conduct of surveys, nor are they incorporated in the analysis of results. There is a need to address such issues to improve both the quality of surveys and the analyses of data. Ideally the collection of survey data should be optimised according to the variables available and the analysis methods that will be applied.

The aim of the Theme Session was to provide a forum for discussion of methods and presentation of results that take into account the multivariate nature of survey data and/or combine variability sampled at different space-time scales. 30 papers were received all of which were relevant to the Session, 11 of these were displayed as posters and presented in summary in the session; 19 were presented orally.

Presentation of papers

The Session opened with an invited review of uses of surveys for fisheries management, independently from catch at age models (Doc. K:24). Examples of North East Arctic cod and Namibian hake were shown where the surveys indicated different stock trajectories from the catch-at-age matrix method of assessment.

The Session then considered papers dealing with examples of the external factors which influence survey catch rates in bottom trawl surveys. The catching efficiency of the net is affected by the geometry of the trawl which varies with depth. Generally the effective swept area/volume is unknown and hence an average value is used. This assumes that between surveys the distribution of the fish does not change. When it does the survey will over- or under-estimate the population size. It was clear that in addition to fishing gear effects, vessel effects can play a role in variation in abundance indices possibly through vessel noise emissions. Many marine fish species are associated with specific topographical features of the seabed, which influences their distribution and aggregation patterns. This feature along with such

covariates as time of day, spatial scale, school size, location and day and night activity levels are external factors which can affect the precision and accuracy of survey estimates if not accounted for. Because sources of variability occur in a multi-dimensional space, extracting and partitioning of this variability among the covariates is often difficult. Marine trawl surveys are coarse in scale relative to the variability that is often high. Therefore estimates of abundance are generally imprecise. This effect also makes it more difficult to establish the influence of individual factors. Sampling precision of biological features was also investigated and shown to be seriously affected by within sample correlation. This indicates that large measured numbers may not be helpful but increased numbers of samples is much more effective.

Model-based approaches such as generalised linear models (GLM) and generalised additive models (GAM) were shown to be good tools for modelling spatial data both from trawl and egg surveys and these models can easily incorporate covariate data in its formulation to derive new abundance indices with improved precision. Both categorical and continuous variables were included and models are fitted with model selection being best when a mixture of common sense complimented by information theory was used. The models allow highly informative temporal and spatial illustrative cartoons. Explicit relationships can be obtained and the precision of these estimated through bootstrap. Geostatistics, in this case kriging with external drift, allows correction for external spatially variable factors without the need for coefficients, the variable being estimated is guided between the observations by the shape of the external variable. Improvement in the fit between the modelled indices and independent assessments were demonstrated. For bottom trawl surveys, logbook data were used with the survey data to analyse the biological life cycle in space and time. Shifts in the spatial pattern of spawning were related to a decadal increase in temperature.

For pelagic fish, swimming migratory behaviour of schools, school characteristics and spatial clustering of schools were related to environmental parameters and strongly consistent latitudinal effects were observed. While schools' characteristics did not show any relation with local environment nor with local biomass, migratory and clustering patterns could be related to general regional ecological conditions.

Discussion

The Session concluded with a useful discussion, which highlighted a number of important points for future consideration.

Survey data was regressed on covariates relating to the many potential sources of variability using multivariate analysis techniques. Confounding effects between covariates are often observed and if the modelling is to assign variability appropriately an even sampling of all the multivariate space (time of day, location, vessel and gear) is required. This in turn requires appropriate survey design.

Data collection could be increased or in some cases diverted and dedicated to two types of complementary studies:

- small scale directed experiments which focus on analysing the processes of catch variation; leading to site specific determination of relationships,
- sampling more evenly the multidimensional space of catch variation and statistically identifying the confounding effects throughout the data set. In multi-vessel surveys there is a need to construct overlapping coverage with different vessels. This second method may not clarify the processes affecting catch rate but will provide appropriate survey specific corrections which should provide improvements in the survey performance.

Two kinds of covariates have been found useful:

- those that increase precision because they enable better characterisation of the structural relationships such as depth,
- those that increase the dimensionality of the data set, for instance, the time of day (and behavioural covariates), vessel and gear variables. Increasing the dimensionality to better understand the data and account for these sources of variability will add

extra variance terms which may not diminish the overall variance but will provide a greater insight and a more realistic estimate of precision.

In particular a day/night affect was thought to be a continuous function influencing catch rates even during daytime. To account for this there may therefore be a need for surveys that collect only day data to require night samples to better characterise the time of day effect. Externally derived correction factors were not perceived as a solution to this problem, however, removal of confounding effects have been proposed using GAM or Geostatistics.

In addition to direct stock indices, surveys also allow monitoring of biodiversity and biological parameters. Optimisation of survey design, sample placement and tow duration should be considered at the design stage when possible. However, some changes can be made to improve survey efficiency. Additional instrumentation can be added to existing surveys to measure fishing gear and fish behaviour with the aim of monitoring and optimising performance. For example the inclusion of bottom contact sensors should be mandatory for bottom trawl surveys. More understanding of the processes at work in the relationships between fish behaviour and surveys was stressed. The interest in experiments as well as in the use of new technology such as remote vehicles and sonar observation was noted.

The ability of the survey data alone to show clearly the trends in population abundance was clearly demonstrated. The models presented provided great insights and the potential for improvement in estimating survey abundance indices and the development of survey based stock management models was particularly stressed.

Documents presented

K:01	S. Adlerstein and S. Ehrich	Effect of deviation from vessel target speed over ground, trawl speed through water and time of day on catch rates of several fish species in North Sea surveys.
K:02	D.J. Beare, D.G. Reid, and P. Petitgas	Spatio-temporal patterns in herring (<i>Clupea harengus</i> L.) school abundance and size in the NW North Sea: Modelling space time dependencies to allow examination of the impact of local school abundance on school size.
K:03	D.J. Beare, D.G. Reid, P. Petitgas, P. Carrera, S. Georgakarakos, J. Haramlambous, M. Iglesias, B. Liorzou, J. Masse, and R. Muino	Spatio-temporal patterns in pelagic fish school abundance and size: a study of pelagic fish aggregation using acoustic surveys from Senegal to Shetland.
K:04	D.J. Beare and D.G. Reid	Investigating the complexity of spatio-temporal patterns evidenced in the triennial mackerel and horse-mackerel egg survey data.

K:05 Poster	N. Bez and J. Rivoirard	Collocation indices to compare spatial distributions of populations.
K:07	P. Brehmer, F. Gerlotto, and B. Sam	Measuring fish school avoidance during acoustic surveys.
K:09	L. Clarke, D. Stahl and J. Simmonds	Spatio-temporal models of North Sea Herring.
K:10 Poster	J. Coetzee, O.A. Misund, and D. Boyer	Survey vessel avoidance reaction of <i>Sardinella</i> off Angola.
K:11	T.R. Hammond, and C.M. O'Brien	Persistence of acoustically observed fish biomass in a 220 km survey region.
K:14	C. Kvamme, L. Nøttestad, B. Axelsen, A. Dommasnes, A. Fernö, and O.A. Misund	A sonar study of the migration pattern of Norwegian spring-spawning herring (<i>Clupea harengus</i> L.) in July
K:15	O.M. Lapshin, Y.V. Gerasimov, Y.G. Izumov, and I.G. Istomin	The influence of polymorphic characteristics on the Alaska Pollack (<i>Theragra chalcogramma</i>) fishing efficiency.
K:16 Poster	R.B. Mitson	Fish avoidance: the vessel noise factor.
K:17	R. Muiño, and P. Carrera	Sardine (<i>Sardina pilchardus</i> Walbaum) characterisation off the Spanish Atlantic coast.
K:18	C.M. O'Brien and J.C. Fox	Incorporating temporal information in ichthyoplankton surveys using a model-based approach: cod: (<i>Gadus morhua</i> L.) in the Irish Sea.
K:19	C.M. O'Brien, S. Adlerstein, and S. Ehrlich:	Accounting for spatial-scale in research surveys: analyses of 2-year old cod from English, German and international groundfish surveys in the North Sea.
K:20	R.P. Oeberst, P. Ernst, and C.C. Friess	Inter-calibrations between German demersal gears HG 20/25 and TV3 520 as well as between the gears TV3 520 and TV3 930.
K:21	R. Oeberst	Proposal for the stratification of the Baltic Sea for the Baltic International Trawl Survey.
K:23	M. Pennington, L. Burmeister and V. Hjellvik	Assessing trawl-survey estimates of frequency distributions.
K:24	M. Pennington	Survey-based stock assessments: Are they more reliable than catch-based assessments?
K:25	P. Petitgas	On the clustering of fish schools at two scales and their relation with meso-scale physical structures.
K:26	G.A. Petrakis, D.N. MacLennan, and A.W. Newton	North Sea trawls surveys: Diel and depth effects on the catch rates.
K:27	G. Piet	Evaluation of the incorporation of external information using GAM on the catch-at-age index estimation for North Sea plaice and sole.
K:28	D.G. Reid, D.J. Beare, J-C Mahe, P. Connolly, C.G. Davis, and A. Newton	Quantifying variability in Gear Performance on IBTS surveys: Swept area and volume with depth.
K:29	D.G. Reid	The relationship of herring school size to seabed structure and local school abundance in the NW North Sea.
K:30	J. Rivoirard	Testing the effects of vessel, gear and daylight on catch data from the International bottom trawl survey in the North Sea.

K:31	J. Rivoirard and K. Wieland	Correcting daylight effect in the estimation of fish abundance using kriging with external drift, with an application to juvenile haddock in North Sea.
K:32	J. Simmonds and J. Rivoirard	Vessel, and day/night effects in the estimation of herring abundance and distribution from the IBTS surveys in North Sea.
K:33	D. Somerton and K. Weinberg	The effect of water speed on bottom contact and escapement under the footrope of a survey trawl.
K:34	B.K. Stensholt, K. Michalsen, and O.R. Godø	Behavioural rhythm of cod during migration in the Barents Sea.
K:36	M. Verdoit and D. Pelletier	Characterizing the spatial and seasonal dynamics of the whiting population in the Celtic Sea from the analysis of commercial catch and effort data and scientific surveys data.
K:37	C.W. West and J. R. Wallace	Measurements of distance fished during the trawl retrieval period.
K:39	E.J. Simmonds, E. Toresen, E. Torstensen, C. Zimmermann, E. Götze, D.G. Reid, and A.S. Couperus	1999 ICES Coordinated acoustic survey of ICES Division IIIa, IVa, IVb and VIa (north).

THEME SESSION ON SUSTAINABLE AQUACULTURE DEVELOPMENT (O)

Co-Conveners: H. Ackefors (Sweden) and H. Rosenthal (Germany)

Rapporteur: A. Calabrese (USA)

Introduction

H. Ackefors opened the Theme Session with comments on a recently published paper¹. 30 % of fishmeal and 50 % of fish oil are used in aquaculture, and the supply of fish products as food in aquaculture is in demand. However, a recent report from Fish Farming International refutes the claim that aquaculture is impacting fisheries.

Summary of presentations

The papers presented in this Theme Session are briefly summarised below:

- 1) Doc. 0:4. The paper proposed a regulatory framework called Coherent Regulatory System whereby political support is required to push for environmental quality objectives which lead to environmental standards. This development then leads to management systems which lead to a trigger level whereby a reaction takes effect. Regulatory frameworks can support the development of mariculture – such a framework can provide the industry with predictable and stable longterm conditions, prevent unacceptable environmental impacts, ensure a good environment for production and raise the credibility of the industry.
- 2) Doc. 0:02. Over 1900 juvenile turbot were cultured and released in Belgian waters to assess the possibility of stock enhancement of this species. The fish were conditioned for release by feeding them natural foods for a period of time. They were then tagged and released in a closed area for fishing. The fish moved around quite a bit and moved offshore during the winter and returned inshore in spring. Growth rates and feeding activities were similar to those of wild fish. It was estimated that the return rate for the tagged, cultured fish was 16 %, and that a large number were returned from the Netherlands. The fact that the fish went to the Netherlands suggested that this type of programme would not necessarily be good as a National Programme for Belgium.
- 3) Doc. 0:05. The purposes of this paper were to:

- i) compare heritabilities of cortisol and lysozyme and estimate phenotypic and genetic correlations between them;
- ii) produce selection lines based on high or low responsiveness for cortisol and lysozyme;
- iii) assess the consistency of altered stress response in the progeny; and
- iv) test progeny groups for various performance traits.

It was determined that cortisol is definitely inherited by the F₁ progeny, and this was essentially the same for lysozyme, particularly in sea trout. In seabream no clear relationship was formed between selection for stress responsiveness and growth. Similarly, there was no difference in growth between the low- and high-stress cortisol level. Regarding the quality of fish flesh, low-stress fish tended to perform better than high-stress fish. The concluding remark was that it is not quite yet determined whether selection for high- or low-stress responsiveness is advantageous or of negligible value under aquaculture conditions.

- 4) Doc. 0:03. GIS is a tool to use for mapping areas where aquaculture sites can be located. It can overlay data from various sources to provide good site information. A common problem in GIS is the lack of standardisation with regard to input data, analysis functions, and map presentations. One example is how to locate suitable aquaculture sites in Norwegian waters. Topics to consider are 1) area capacity and 2) recipient capacity. A figure was presented depicting various components of a conceptual model used to assist in the development of a GIS system for locating a site for a fish farm. The model, as developed, could indicate at a gross level how many fish could be produced at a particular site.
- 5) Doc. 0:06. Juvenile cuttlefish require live feeds during their early development. The difficulty in rearing them on an artificial diet is inefficient digestion. To develop an artificial diet to be accepted by early juveniles, their digestive capability was studied. Biochemical estimation of temporal development of digestive enzymes showed a correlation between growth and proteolytic activities from hatching to 30 - days old.
- 6) An unannounced paper on “Growth, survival and directional asymmetry of the shells of Ireland scallops grown under various conditions in the field” by M. Frechette and G. Dayle.

A test of density-dependence on a single population of scallops based on asymmetry was conducted by

¹ “Effect of Aquaculture on World Fish Supplies”. By Rosamond L. Naylor et al. Nature Vol 405, 29 June 2000, pp 1017-1024.

placing scallops in nets near the bottom and near the surface at two different sites. Different concentrations of scallops were used for studies of density-dependence. A number of interactions occurred at the various densities, but no significant differences were found in density-dependence. There was a link between asymmetry and survival but not density dependence.

- 7) An unannounced paper entitled “The Monitoring and Regulation of Marine Aquaculture in Europe (MARQUA)” by T.F. Fernandez, K.L. Miller, and P.A. Read was presented by H. Ackefors.

The MARQUA (Monitoring and Regulation of Marine Aquaculture in Europe) Concerted Action was established to devise scientific guidelines for Best Environmental Practice (BEP). The objectives are to i) prepare a compilation of the nature and

scale of marine aquaculture production in the EU from existing statistics; ii) prepare a critical review of current and proposed licensing, regulatory, and monitoring guidelines and procedures with specific references to changes since earlier reviews; effluent control and monitoring strategies for the assessment of environmental impact which are being developed or have been adopted; and iii) define scientific guidelines for BEP for harmonised regulatory control and monitoring strategies which would be widely applicable.

- 8) Doc. O:01 was not presented.
- 9) Doc. O:07 was briefly presented as was an unannounced poster on “Some growth data of cold shock triploids in turbot (*Scophthalmus maximus*)” by E. Vasquez, C. Fernandez-Pato, C. Martinez-Tapia, G. Blanco, and A. Sanchez.

Documents presented

O:01	Ian M. Davies:	Waste production by farmed Atlantic salmon (<i>Salmo salar</i>) in Scotland
O:02	Daan Delbare and Rudy de Clerck:	Release of reared turbot in Belgian coastal waters as a tool for stock enhancement
O:03	Inge Døskeland and Pia Kupka Hansen:	Geographic information systems (GIS) are tools for better integrated coastal zone planning and management (ICZP/M)
O:04	Arne Ervik:	Regulatory frameworks can support the development of aquaculture
O:05	Svein-Erik Fevolden and Knut H. Røed:	Prospects for selective breeding for stress tolerance in aquacultured fish
O:06	N. Koueta, A. Le Calvé, B. Noel, and E. Boucaud-Camou:	Changes of digestive enzymes during growth of cultured juvenile cuttlefish <i>Sepia officinalis</i> L (Mollusca Cephalopoda). Effect of enriched diet and ration
O:07 Poster	Lasse H. Pettersson, Dominique Durand, Thomas T. Noji, Henrik Sjøiland, Einar Svendsen, Steve Groom, Samantha Lavender, Peter Regner, and Ola M. Johannessen:	Satellite observations and forecasting can mitigate effects of toxic algae blooms

THEME SESSION ON NEW TRENDS IN FISH FEEDING IN AQUACULTURE (P)

Co-Conveners: J.D. Castell (Canada) and S.J. Kaushik (France)

Introduction

There have been recent concerns in Europe with regard to possible contamination due to the incorporation of terrestrial animal by-products (mad cow disease) or due to excess dioxin levels in fish feed. Consequently aquaculture is facing a new series of challenges, i.e., ensuring food safety while producing high standard, quality fish for better human health.

From an ecological point of view, there is also greater concern for the development of aquaculture diets with substantial reduction of ingredients from fishery resources in order to optimise food chain transfers. Less polluting fish diets to minimise environmental impacts have been developed by decreasing their nutrient components, by increasing their digestibility, and by increasing the physical characteristics of the pellets for several species.

Presentations on the following subjects were invited:

- State of the art in ICES countries of the use of animal meals in fish diets;
- Replacement of animal proteins by vegetable sources;
- Production of more digestible and less polluting fish diets;
- Contamination of lipids in different areas of production of fishmeal (heavy metals, PCBs, dioxins).

Overview of the session

Three presentations were made dealing with three major issues of concern towards sustainable development of aquaculture. Current projections on the availability of fishmeal and fish oil indicate frightful scenarios of over-dependence of the aquaculture industry on a single, expensive and depleting natural marine source. Studies on marine fish such as the European sea bass and Gilthead sea bream show that significant reductions in dietary fishmeal and fish oils can be achieved with equivalent growth rates or protein gains. One question, which was raised, was whether such short-term growth trials will be applicable to broodstock fish. Indeed, feed composition and especially the choice of raw materials should aim towards optimisation of the nutrient supply in tune with specific physiological demands of larvae or broodstock as well as to tailor the nutritional quality of fish as food for man. In the context of depleting marine resources, there are other avenues of research looking into the potential of using fish offal directly as a feed ingredient instead of converting capture fish into fishmeal and fish oil, which are subsequently used as

feed ingredients. Studies conducted with Atlantic salmon indeed show that, subject to proper technological treatments, fish offal can be used as an excellent alternative.

Besides feed for fish, fish as food is another point which was dealt with – with a particular outlook on possible undesirable substances in fish feed – inorganic nutrients, minerals, trace elements, polychlorinated organic compounds, dioxins, etc. A systematic environmental monitoring programme has been set forth including analyses of more than fifty inorganic compounds, several organic compounds, as well as radioisotopes.

In terms of flesh quality, it should also be recognised that “there is more to fish than just fish oils.”

Major conclusions

Though, as noted in D. Pauly's Open Lecture, there are limits to continued expansion of aquaculture based upon feeds using fishmeal and fish oils, a great deal of research has been conducted on alternative sources of protein and lipid. It was suggested in this Theme Session that ICES might organise a scientific team to consolidate the published information into a report. This report would recommend limits to the safe levels of replacement of fishmeal and fish oil by each alternative feed ingredient for each species of major interest to present and future aquaculture. A similar consolidation of information on the other topics of concern in this Theme Session may also be desirable.

Another suggestion was to set up a searchable bibliography Website with references on selected topics such as alternative protein and lipid sources to replace fishmeal and oil in aquaculture feeds. J. Castell offered to start with an electronic bibliography with 362 references on this topic. Other topics that were suggested included immunostimulants, live food organisms and larvae nutrition, contaminants in fish feed ingredients, effects of feed formulations on flesh quality, and others.

There was concern expressed that ICES is competing with other scientific organisations such as the European Aquaculture Society (EAS), World Aquaculture Society (WAS), etc., and that it might be time to reconsider the focus and aims of mariculture Theme Sessions in ICES. This Theme Session was not widely promoted among aquaculture researchers and there might have been considerably more input, had the Session been more widely advertised and promoted. At the very least, when organising future scientific conferences and sessions of this nature, co-ordination between ICES and other scientific organisations such as EAS and WAS should be encouraged.

Documents presented

P:01	P. Coutteau, S. Ceulemans, R. Robles, A. Olivia-Tales, S. Chatzifotis, A. Van Halteren, and P. Verstraete:	Fish meal/fish oil replacement in practical diets for European sea bass <i>Dicentrarchus labrax</i> and gilthead seabream <i>Sparus aurata</i> .
P:02	G.I. Hemre and K. Sandnes:	‘By-catch and offal’ feed from the herring industry – performance of Atlantic salmon as concerns growth, feed utilisation and fillét quality.
P:03	A.-K. Lundebye, B. Bøe, and K. Julshamn:	Documenting seafood safety: contaminant concentrations in Norwegian fish feeds and mariculture products.
P:04	C. Talbot and A. García-Gómez:	The role of technology transfer in the development of new fish species for aquaculture. Paper withdrawn.
P:05 Poster	L. Tort, J. Rotllant, S. Ceulemans, and P. Coutteau:	Screening of immunostimulants for the gilthead seabream <i>Sparus aurata</i> .
P:06 Poster	J.T. Zambonino, C. Cahu, and P. Coutteau:	Fish meal and fish oil replacement by vegetable lipid and protein sources in sea bass diets.

THEME SESSION ON NORTH ATLANTIC PROCESSES (L)

Co-Conveners: W.R. Turrell (UK) and T. Rossby (USA)

Introduction

This is a standing Theme Session of the Oceanography Committee, which draws together scientific papers on oceanography, submitted to the Annual Science Conference. While it is a venue for papers on all aspects of oceanographic processes in the North Atlantic and Nordic Seas, each year a different emphasis is attempted. At this Conference the focus is on bringing together academics, researchers and fishery scientists in order to discuss new observational methodologies, and concepts in North Atlantic processes and their variability, in order to improve monitoring and the understanding of long term change. Young scientists in particular were encouraged to contribute to the session.

Presentation of Papers

The Session attracted 17 papers and 3 posters. For various reasons only 12 papers were presented orally. These covered, nonetheless, a wide range of geographic and topical issues. The order of presentation was essentially geographic, beginning in the Newfoundland Basin (Doc. L:17) and Labrador Sea (Docs. L:02, and 18) and proceeding Northeast across the Atlantic (Doc. L:19) and Nordic Seas (Docs. L:03, and 09) to the Barents Sea (Doc. L:14) and lastly, the Baltic Sea (Doc. L:08). Changes in hydrographic conditions in the western Atlantic and Labrador Sea were discussed, along with the cause and advection of sea surface temperature anomalies within the North Atlantic Current. Two papers presented Lagrangian observations between the Sub-Polar Front and the Greenland Scotland Ridge, and two papers dealt with direct measurements of currents around the Faroes. Hydrographic signatures were used to make inferences about allowable circulation modes in the Barents Sea.

General Discussion and Summing Up

The aims of the Theme Session were achieved. Firstly, participation from a variety of different oceanographic communities was stimulated by the Session, allowing cross-fertilisation, which would not otherwise have occurred. While the contributions from younger

scientists were restricted in number, those that did contribute made excellent and enthusiastic additions through oral presentation, questions and posters.

In terms of long-term oceanographic monitoring and its application within ICES, the Working Group on Oceanic Hydrography produces the ICES Annual Ocean Climate Status Summary. This product is increasingly being used within ICES to set the context of any one year in terms of ocean climate and its current and past variability. New data sources became evident during the Session, including the lengthening time-series of transport now available from direct observations by vessel-mounted and moored ADCPs. The increasing use of Lagrangian floats is also generating a new data source, and will generate new time series on properties of the ocean previously not monitored. Time series from new geographical areas were also shown, including the Baltic, which currently is not included in the IAOCSS.

During the Session itself, the papers were attended with real interest by those present. A number of questions were addressed to speakers, reflecting the more intimate nature of the venue of the Session compared to larger auditoria.

Conclusion and Proposals

This was the second time a Session on North Atlantic Processes took place at the ASC. The purpose is to bring to ICES a stronger physical oceanographic presence and participation than in the past. While this is a positive development, it could be strengthened further if biophysical issues could be given more attention. Fundamental physical processes, be they advection, dispersion, isopycnal and diapycnal mixing, contact with the atmosphere, all have important consequences to both physical and biological questions, but here at ICES we have the special advantage of examining these from both perspectives. Future sessions might benefit if we can strengthen this interdisciplinary dialogue. It is therefore proposed that next year's (2001) North Atlantic Theme Session focuses on transport processes, and that papers relating these to biophysical interactions are encouraged.

Documents Presented

The NW Atlantic

L:02	E. Colbourne	Interannual variation in the transport of the Labrador Current on the Newfoundland Shelf
L:17	I. Yashayaev	12-year hydrographic survey of the Newfoundland Basin: seasonal and interannual variability in water masses

- L:18 I. Yashayaev, A. Clarke, and J. Lazier The recent decline of the Labrador Sea Water
- L:10 S.-A. Malmberg, H. Valdimarsson, and S. Jónsson Fresh/polar water input in the East Icelandic Current
- L:11 S.-A. Malmberg, H. Valdimarsson, and S. Jónsson Hydrographic conditions in the inflow of Atlantic water into North Icelandic waters in relation to NAO
- L:19 W. Zenk Direct observations of the Iceland Basin cyclone at mid depths

North Atlantic Current

- L:07 G. Krahmann, M. Visbeck, and G. Reverdin Formation and propagation of temperature anomalies in the North Atlantic Current
- L:15 G. Reverdin, H. Valdimarsson, P. Jaccard Surface waters of the North Atlantic subpolar gyre in recent years
- L:16 T. Rossby, A. Bower, P. Richardson, M. Prater, H. Zhang, H. Hunt, and S. Fontana Direct observations of warm water pathways in the northern North Atlantic

North Atlantic / Nordic Seas

- L:01 Y. Bochkov, E. Sentyabov, and A. Karsakov The relation between long-term variations of water temperature in the North Atlantic and Nordic Seas
- L:03 B. Hansen, S. Jónsson, W. Turrell, and S. Osterhus Seasonal variations in the Atlantic water inflow to the Nordic Seas

Upper Ocean Circulation

- L:09 K. Larsen, B. Hansen, R. Kristiansen, and S. Osterhus Internal tides in the waters surrounding the Faroe Plateau
- L:04 P. Jaccard, G. Reverdin, H. Svendsen, S. Østerhus, and T. Rossby First results of upper ocean variability in the North Atlantic between the North Sea and Greenland from repeat ADCP and thermosalinograph measurements onboard the container vessel 'Nuka Arctica'

Shelf Seas - Barents / Baltic

- L:14 V. Ozhigin, A. Trofimov, and V. Ivshin The Eastern Basin Water and currents in the Barents Sea
- L:06 E. Karasiova, and A. Zezera On influence of long-term variability of temperature regime in the Gdansk Deep of the Baltic Sea on the sprat reproduction and the offspring survival
- L:08 S. Kydersky, and A. Zezera Multidecadal changes in the Baltic marine ecosystem under hydroclimatological forcing

Posters

- L:20 R. Invaldsen, L. Asplin, and H. Loeng Transport of Atlantic water through the Barents Sea
Poster
- L:21 H.-Ch. John, V. Mohrholz, and J. Lutjeharms Cross-front structures in hydrography and fish larvae at the Angola-Benguela Frontal Zone
Poster
- L:22 V. Mohrholz, M. Schmidt, J. Lutjeharms, and H.-Ch. John Space-time behaviour of the Angola-Benguela Frontal Zone during the Benguela Nino of April 1999
Poster

THEME SESSION ON CLIMATE-PLANKTON-FISH LINKAGES (M)

Co-Conveners: K. Drinkwater (Canada), J. Runge (Canada), K. Tande (Norway), and P. Wiebe (USA)

Rationale

Many of the Global Ocean Ecosystem Dynamics (GLOBEC) studies in the 1990s focussed on the dynamics of zooplankton, with special emphasis on their connection to the physical environment. Justification was often built upon their links to commercial fisheries. The principal purposes of the Theme Session were therefore twofold: one to present the results of studies on the role of the physical environment including ocean climate on plankton and secondly to show the relationship between zooplankton and fish.

Overview

The presentations and posters covered studies of the physical controls governing phytoplankton and zooplankton production as well as relationship between climate, zooplankton and fish through a variety of methods. Geographically, most of the studies centered on the northern North Atlantic, but work on the northern Pacific (Docs. M:13, and 23), off eastern South America (Doc. M:25), off Africa (Doc. M:30) and the Antarctic (Doc. M:28) were also included. New understanding of the distribution and the role of the physical environment on *Calanus finmarchicus*, in particular, were forthcoming. The studies divided into four main categories:

1. Field Observations: Several presentations and posters were based upon field observations, either from recently directed studies or from long-term monitoring activities. The latter included Secchi disc observations in the northern North Pacific between 1920-91 (Doc. M:23), Continuous Plankton Recorder (CPR) data (Doc. M:18) and a 23-year zooplankton monitoring programme from the eastern U.S. (Doc. M:19).
2. Retrospective analyses: These were undertaken of long time series to investigate not only the effects of climate on plankton, but also the effects of zooplankton on fish stocks.
3. Modelling: Modelling was presented as a means of synthesising the observations and helping to improve understanding through identification of mechanisms and development of hypotheses. Activities included coupled 3-D hydrodynamic and ecological models, with some focus upon *Calanus finmarchicus* and other major zooplankton species (Docs. M:08, 17, 20, and 24). Simple box models were also used, however, to gain insights into the food web (Doc. M:21). Other approaches used included stomach analysis (Doc. M:09) and size-spectra (Doc. M:14).

4. Technological methods: These were highlighted in some studies, including the use of RNA-DNA ratios in growth studies (Doc. M:03), genetic methods for determining stock structure (Doc. M:04), optical plankton counter (OPC) data for collecting zooplankton information (Doc. M:08), and acoustic methods in examining zooplankton distributions (Doc. M:25).

Major conclusions

Based upon observations and modelling, the distribution of phytoplankton and zooplankton, such as *Calanus finmarchicus* in the northern North Atlantic, were shown to be strongly influenced by the physical environment including hydrographic properties, circulation and/or mixing.

Ecological modelling has made important advances, adding increasing complexity such as incorporating the numerous stages of zooplankton and fish larvae. While such models can reproduce many of the observations, there are still discrepancies between model and data. Improved understanding of the behaviour and distribution of the various life history stages and their incorporation into the models will be important if the rapid advances being made through modelling are to continue.

In the North Sea, major ecosystem changes are principally driven by fluctuations in the Atlantic Water inflow, except along the south-eastern coastal areas where the ecosystem variability is controlled by nutrient input (Doc. M:05). Large-scale atmospheric processes as indexed by the North Atlantic Oscillation (NAO) appear to drive part of these fluctuations (Doc. M:05) and were also implicated in studies in the Baltic (Doc. M:16) and on Georges Bank (Doc. M:15).

The role of zooplankton on fish recruitment appears spatially dependent. A positive relation was observed between zooplankton and fish on Georges Bank (Doc. M:15), a negative relationship off eastern Canada (Doc. M:07) and the total amount of zooplankton on Georges Bank and the Middle Atlantic Bight was remarkably stable from 1977 to 1999, in spite of large changes in both demersal and pelagic fish stocks (Doc. M:19). The reason for the differences may be related to species considerations as well as collection procedures including frequency and timing.

With regard to linkage between zooplankton variation and fish recruitment, a major outstanding issue is the extent to which early life stages of fish are food limited.

Problems with zooplankton time series were noted. They are often of short duration and not always overlapping in

space or time with the fish species of interest. In addition, the large extent of the patchiness of the zooplankton itself introduces a level of variation that can make it difficult to observe the underlining relationships between the zooplankton and higher trophic levels. While correlation analyses must be viewed cautiously, especially given the difficulties with the zooplankton time series, such results may help us to focus on the important operative processes.

Future activities

The results presented during this theme session provide valuable information that will help future ICES and

GLOBEC activities. These include a possible ICES/GLOBEC Workshop for Optical Plankton Counter users that will help in the collection and interpretation of zooplankton data. In terms of the studies on *Calanus finmarchicus* whose range extends across the North Atlantic, a co-operative and comparative Trans-Atlantic approach is needed, including coupled basin and shelf models. Indeed, such studies are being planned that possibly would be jointly funded by European and North American agencies. The work from the Theme Session will be useful for the Working Groups on Cod and Climate Change and Zooplankton Ecology in planning new activities related to zooplankton monitoring and the relationship between zooplankton and fish stocks.

Documents presented

M:01	C.C. Ajuzie and G.T. Houvenaghel	<i>Prorocentrum lima</i> (Microalgae: Dinoflagellata: killer food for zooplankton
M:03	L.J. Buckley, E.C. Caldarone, R.G. Lough, and T.L. Ong	Patterns in growth, ingestion and survival probability of Atlantic cod (<i>Gadus morhua</i>) and haddock (<i>Melanogrammus aeglefinus</i>) larvae on Georges Bank
M:04	A. Bucklin, O.S. Astthorsson, A. Gislason, and P.H. Wiebe	<i>Calanus finmarchicus</i> in Icelandic waters: population genetics and ecology at the Norwegian Sea/N. Atlantic Ocean boundary
M:05	R. Clark and C. Frid	Long term changes in the North Sea – A two-model system?
M:07	K.F. Drinkwater, K.T. Frank, and B. Petrie	The effects of <i>Calanus</i> on the recruitment, survival and condition of cod and haddock on the Scotian Shelf
M:08	A. Edvardsen, D. Slagstad, K.S. Tande, and P. Jaccard	Measurements and modelling of ocean climate and zooplankton in the Barents Sea
M:09	A. Gislason and O.S. Astthorsson	The food of Norwegian spring spawning herring in the western part of the Norwegian Sea in relation to the annual cycle of zooplankton
M:10	E. Head	Interannual variations in hydrography and spring bloom dynamics, and their effect on <i>Calanus finmarchicus</i> distribution and reproduction on the Scotian Shelf in the late '90s and 2000
M:13	K. Komatsu, Y. Matsukawa, K. Nadata, T. Ichikawa, and K. Sasaki	Seasonal variation of plankton dynamics in the Kuroshio extension region based on a 3-D ecosystem model
M:14	A. M'harzi, S. De Galan, M. Tackx, M.H. Daro, and L. Goeyens	Plankton size distribution and predator-prey relationship in the Belgian coastal zone
M:15	D. Mountain, J. Kane, and J. Green	Environmental forcing of variability in zooplankton abundance and cod recruitment on Georges Bank
M:16	L. Postel	Interannual variations of the amount of herring in relation to plankton biomass and activity, temperature and cloud coverage in the Baltic Sea
M:17	J. Runge, J. Quinlan, E. Durbin, L. Incze, G. Lough, J. Manning, D. Mountain, B. Niehoff, S. Plourde, and F. Werner.	The effect of spatial and temporal variations of zooplankton concentrations on larval cod growth and survival on Georges Bank: a sensitivity analysis based on modelling and observations
M:18	D. Sameoto	Decadal plankton changes on the eastern Nova Scotian Shelf and western North Atlantic
M:19	K. Sherman, J. Kane, S. Mauawski, W. Overholtz, and A. Solow	Zooplankton as an ecological indicator in a fish stock recovery assessment

M:20	D. Slagstad, K. Tande, W. Melle, B. Ellertsen, and F. Carlotti	Regional dynamics of <i>Calanus</i> in the Norwegian Sea in response to ocean climate in 1997
M:21	J. Steele	How to get more fish: ecosystem and environmental problems
M:23	K. Tadokoro, T. Saino, and T. Sugimoto	Geographical variation of Chl-a seasonality and its interannual variation in the subarctic North Pacific Ocean
M:24	F.E. Werner, R.G. Lough, J.A. Quinlan, L.J. Buckley, P. Berrien, E. Caldarone, E. Durbin, C. Flagg, J. Green, L.S. Incze, D.R. Lynch, J.P. Manning, D.J. McGillicuddy, D.G. Mountain, C.E. Naimie, and J.A. Runge	Modelling growth and advection of larval cod and haddock on Georges Bank in evolving flow and prey fields: a synthesis of observations and model results from spring 1995
M:25 (Poster)	G.L.A. Colombo and A.O. Madirolas	Sound scattering from macrozooplankton agregations off Patagonia at 38 kHz
M:26 (Poster)	K. Aydin, P. Livingstone, and R.C. Francis	Carrying capacity of apex predators and the frequency and cadence of physical forcing in marine food webs
M:27 (Poster)	J.J. Bisagni	The seasonal cycle of nitrate supply and potential new production in the Gulf of Maine and Georges Bank Regions
M:28 (Poster)	S. Chiba, T. Ishimaru, G.W. Hosie, and M. Fukuchi	Large scale interaction between sea ice dynamics and zooplankton community off east Antarctica
M:29 (Poster)	S.S. Drobysheva and V.N. Nesterova	Reasons of plankton biomass dynamics in the southern Barents Sea
M:30 (Poster)	D.S. Neto, B.B. Sangolay, C.A. Ruby, M.L. Silva, and H.S. Marques	Phytoplankton biomass across and along the Angola-Benguela frontal zone in April 1999
M:31 (Poster)	E. Orlova, A.V. Dolgov, V.N. Nesterova, M.Yu. Antsiferov, and L.L. Konstantinova	Peculiarities of feeding behaviour in Arcto-Norwegian cod in the southern Barents Sea when major food objects are in deficiency
M:32 (Poster)	E. Orlova, E. Seliverstova, and V. Nesterova	Some features of distribution and feeding of the Atlantic herring (<i>Clupea harengus harengus</i>) in the Barents Sea
M:33 (Poster)	E. Sentyabov, and N. Plekhanova	Rapid variations of the Norwegian Sea water heat

THEME SESSION ON SPATIAL AND TEMPORAL PATTERNS IN RECRUITMENT PROCESSES (N)

Co-Conveners: E.D. Houde (USA); P. Pepin (Canada); D. Schnack (Germany), P. Munk (Denmark)

Session description

The processes leading to recruitment of fish and shellfish show temporal and spatial variability. Hydrography, trophic relationships, and reduced stock abundance due to fishing all act and interact to determine recruitment abundance, distributions, and trends therein, in space and time. Our understanding of these processes is limited, but critical to evaluate the dynamics of stocks and their management. The Theme Session included contributions that addressed issues of patterns, trends, and scale in recruitment with respect to hydrography, predator-prey and stock abundance, as well as other climatic and environmental factors. The Session also addressed relationships between settlement, recruitment and habitat suitability, as well as the development of new methodological approaches to the study of spatial variability (e.g. remote sensing, spatial statistics, data visualisation methods).

Presentations

Papers with similar emphasis were aggregated and presented in five topic areas: 1) dispersal and nursery grounds; 2) growth and mortality; 3) spatially-explicit models of early-life processes; 4) spawning and spawning habitat; 5) stock-recruitment relationships. In each case, presentations emphasised processes or mechanisms related to recruitment of fish or shellfish in marine environments.

Results, insights and discussion

The majority of presentations dealt with fish species and stocks from the North Atlantic. However, substantial insight was gained from presentations from the southern and tropical Atlantic. There was a single presentation dealing with recruitment processes that affect invertebrates. The lack of a greater number of presentations dealing with invertebrates emphasises a major gap in the information available to ICES. There should be increased efforts to encourage contributions from researchers working on this taxonomic group.

A large proportion of studies highlighted the necessity of coupling hydrodynamic circulation models with biological observations or models to gain a better understanding of the dynamics of marine populations. Such approaches are the only means of obtaining a perspective of the spatial and temporal variations in the environmental history of eggs and larvae. The scale of applications ranged from that of small bays to large portions of regional seas. There was clear evidence from all these presentations that small-scale variations in the currents, either in space or time, can lead to substantial variations in the drift, retention and potential survival of

eggs and larvae released into these diverse systems. The cause of the changes in survival and development were varied and depended greatly on the biological dynamics in each system. Presentations highlighted the significant advances that have been made in the development of circulation models and in our ability to provide spatially-explicit representations of biological processes. This is not only the result of technological advances but also the result of the novel insights which individual researchers have been able to develop because of a real desire to push the edges of our knowledge. There were renewed calls for increased development of methods and approaches to provide validation of the models and their predictions. This validation can only be achieved through increased collection of basic information about the physical and biological environment as well as through the development of new quantitative approaches for model testing.

The majority of presentations highlighted the concept that all eggs and larvae do not have an equal probability of surviving. The time, location and patterns of spawning and hatching are critical elements in determining the potential for survival. However, optimal conditions for survival are highly variable and constancy in the characteristics of a stock or species is not a guarantee of successful reproduction. Only by ensuring the health of a stock's status (in terms of range, abundance and condition) can we hope to maximise the probability of successful recruitment. Variations in a multitude of environmental factors generate fluctuations in recruitment. It is clear that single variables are unlikely to provide strong predictive capabilities over the long term because of the many dynamic processes (e.g. transport, feeding, predation, and reproduction) that are fluctuating through time and space.

Just like the variation in timing and location of appropriate survival windows, a number of presentations showed that recruitment is not fixed at a particular life stage. The characteristics of spawners (age, size, condition and abundance) can influence the survival potential of offspring, and changes in the distribution of adults caused by changes in the environment, or as a result of fishing pressure, are likely to have a substantial impact on recruitment potential. This was highlighted in a number of studies which showed evidence that the distribution of water masses in which spawning products are released differs substantially depending on stock status.

It was not only circulation models that provided a means of tracking the fate of eggs and larvae. The continued use and developments of methods to analyse otolith microstructure and chemistry provide a means to address the spatially-explicit variation in early life processes. The ability to reconstruct an individual's environmental

history in terms of growth rates can be enhanced by being able to provide a more accurate assessment of the temporal pattern in that individual's location in space.

The role of predation in structuring population dynamics remains poorly understood. A large number of studies presented diverse attempts to characterise and quantify the impact of predators. Descriptions of the temporal variations in the spatial distribution of planktivores (both vertebrate and invertebrates) continues to be a daunting task and its control of natural mortality remains one of the areas of research that requires substantial attention.

Despite the theme of the Session, the appropriate time and space scales to be sampled to provide an accurate understanding of the processes that determine

recruitment variability remain unclear. Small-scale stochastic processes may play an important role in determining which individuals are likely to survive but the description of such events in space and time may be impossible, at least with the present level of understanding. It is clear that the dynamic nature of currents requires a level of predictability that depends on an ability to identify and forecast eddies and the associated areas of convergence and divergence. However, the distribution of other physical and biological variables must also be collected or predicted on scales suitable to describe their interaction with eggs, larvae and juveniles. Furthermore, it cannot be concluded that the largest scale that must be sampled is that of the population because a number of talks presented evidence that adjacent populations are not necessarily independent due to the potential transport of young between them.

Documents presented

N:01	G.A. Begg and G. Marteinsdottir	Incorporating spawning origins of pelagic juvenile cod and environmental variation in the stock-recruitment relationship
N:02	M. Blei and R. Oeberst	Reproduction areas of the cod stock in the western Baltic Sea
N:03	J. Boje and E. Hjørleifsson	Nursery grounds for the West Nordic Greenland halibut stock--where are they?
N:04	R.K. Cowen, C.B. Paris, K.M.M. Lwiza, and D.B. Olson	Long distance dispersal versus local retention as a means of replenishing Caribbean marine fish populations
N:05	P.D. Eastwood and G.J. Meaden	Spatial modelling of spawning habitat suitability for the sole (<i>Solea solea</i> L.) in the eastern English Channel and southern North Sea
N:06	M.D. Ehrlich, P. Marthos, and R.P. Sanchez	Causes of spawning pattern variability of anchovy and hake on the Patagonian shelf
N:08	O. Fiksen and A. Slotte	Recruitment variability in Norwegian spring-spawning herring (<i>Clupea harengus</i> L.): the effect of temperature in larval drift trajectories
N:09	T. Grohsler, U. Bottcher, and E. Gotze	Horizontal and vertical distribution of sprat in the Southern Baltic Sea during spawning time. First results of the 1999 German June acoustic survey
N:10	A. Gwenhael, P. Petitgas, P. Lazure, and P. Grellier	Coupling the otolith growth history of anchovy larvae with the physical history of water masses tracked in a hydrodynamic model
N:11	M. Heath and A. Gallego	Modelling the spatial and temporal structure of survivorship to settlement in North Sea and west of Scotland haddock
N:12	S. Hinckley, A.J. Hermann, and B.A. Megrey	An evaluation of the utility of spatially-explicit biophysical models in recruitment studies: the FOCI example
N:13	S. Jung and E.D. Houde	Scale and pattern in recruitment processes of bay anchovy in Chesapeake Bay
N:14	R. Kimura, D.H. Secor, E.D. Houde, and P. M. Picoli	Migration/dispersal patterns of YOY bay anchovy <i>Anchoa mitchilli</i> in the Chesapeake Bay: Sr/Ca analysis on an ubiquitous species
N:15	B. Klenz	Abundance and distribution of larvae of commercially important fish species in the western Baltic Sea during the period 1993-1998

N:16	F.W. Koster, H.-H. Hinrichsen, D. Schnack, M.A. St.John, B.R. MacKenzie, J. Tomkiewicz, C. Mollmann, G. Kraus, M. Plikshs, and A. Makarchouk	Recruitment of Baltic cod and sprat stocks: identification of critical life stages and incorporation of environmental variability and spatial heterogeneity into stock-recruitment relationships
N:17	J. Garcia Lafuente, A. Garcia, S. Mazzola, L. Quintanilla, J. Delgado, A. Cuttita, and B. Patti	Influence of the surface circulation on the spawning strategy of the Sicilian Channel anchovy
N:18	R.G. Lough, C.G. Hannah, P. Verrien, D. Brickman, J.W. Loder, and J.A. Quinlan	Oceanic factors in cod and haddock egg and larval distributions on Georges Bank (1977-87) and processes which may govern interannual variability in recruitment
N:19	S. Mahevas, P. Petitgas, and P. Lazure	Stochastic (Markov) modelling along trajectories in a hydrodynamic model of series of events of potential interest for recruitment
N:20	A. Makarchouk and G. Grauman	The temporal and spatial changes in the observed size of cod eggs in the eastern Baltic
N:21	P. Margonski	The abundance, growth rate and mortality of the early life stages of herring (<i>Clupea harengus</i>) and smelt (<i>Osmerus eperlanus</i>) in the Vistula Lagoon (southern Baltic Sea) during 1998-1999
N:22	P. Munk, T.G. Nielsen, and B.W. Hansen	Spatial patterns in growth rate variability of Arctic cod in Disko Bay, West Greenland
N:23	E.W. North and E.D. Houde	Time, space, food and physics: the temporal and spatial distribution of anadromous fish larvae in an estuarine turbidity maximum (ETM)
N:24	P. Pepin, J.F. Dower, and F.J.M. Davidson	A spatially-explicit study of prey-predator interactions in larval fish: assessing the influence of food and predator abundance on growth and survival
N:25	J.A. Quinlan, R.G. Lough, W. Michaels, M. Fogarty, L.J. Buckley, J.P. Manning, E. Durbin, J.A. Runge, and F.E. Werner	Examining the potential effects of vertebrate predation on Georges Bank larval cod: a modeling study for the 1995 field season
N:26	M.-J. Rochet	Spatial and temporal patterns in age and size at maturity and spawning stock biomass of North Sea gadoids
N:27	M. A. St. John, H. Mosegaard, H.-H. Hinrichsen, P. Gronkjaer, F. Koster, K. Hussy, and R. Neilsen	Baltic cod: resolving processes determining spatial and temporal windows of survival
N:28	C. Stansky	Migration of juvenile deep-sea redfish (<i>Sebastes mentella</i> Travin) from the East Greenland shelf into the central Irminger Sea
N:29	K. Thorisson, B. Gunnarsson and T.H. Asgeirsson	Cod larval catches in Icelandic waters in 1998
N:30 (Poster)	H. Kubota, Y. Oozeki, and R. Kimura	Distributions of larvae and juveniles of small pelagic fishes in the northwest Pacific off east Japan
N:31 (Poster)	T. Thangstad, J.H. Fossa, A. Ferno, and A. Johannessen	Factors affecting the distribution of wrasses (<i>Pisces: Labridae</i>) in a fjord system: analysis by generalized linear models
N:32	M. Aschan, B. Adlansvik, and S. Tjelmeland	Spatial and temporal patterns in recruitment of shrimp <i>Pandalus borealis</i> in the Barents Sea

THEME SESSION ON GENERAL FISHERIES AND MARINE ECOLOGY (Z)

Conveners: W. Vanhee (Belgium) and J.-J. Maguire (Canada)

Theme Session Z was put together by the Consultative Committee from abstracts submitted. The Session was well attended.

Doc. Z:06 concluded that absolute similarity of parasite fauna composition, equal rate of infestation by parasites of most species, similar peculiarities of infestation by *Sphyrion lumpi* and pigmented patches give evidence in favour of the same origin and integrity of *S. mentella* stock of the upper (0-500m) and lower (500-1000m) layers.

Doc. Z:05 examined different hypothesis to explain the spectacular increase in abundance of eelpout (*Zoarces viviparus* L.) in the Gulf of Gdansk from 0.3 kg/hr in 1985 to 373kg/hr.

Doc. Z:07 estimates that trawling may increase the annual flux of nutrients from the sediments by 1.4% for nitrite, 1.8% for ammonium, 0.4% for nitrate and 2.4% for phosphate in ICES statistical sub-rectangle 39E8.

Doc. Z:01 discussed possible reasons for negative correlations between CPUE of *Illex argentinus* and *Loligo gahi* and their implications for management.

Doc. Z:02 analysed the effect of temperature and growth rate effect on the otolith size – fish size relationship for Baltic herring in the Vistula lagoon. The observation that faster growing larvae had larger otoliths than slower growing larvae was contrary to other author's observations and to the theory of uncoupling.

Doc. Z:03. For Northeast Arctic cod, there is a positive relationship between the size at age 0 and year class size at age 3 as estimated by VPA. This document shows that size of 0-group Arcto-Norwegian cod is negatively correlated with size at older age. Larger size at age 0 is linked with inflow of Atlantic waters in the Barents Sea. The stronger the inflow, the higher the average size at age 0. However, strong inflow will also carry the 0 group further in the Barents Sea where they will settle to colder bottom sea temperature and thereafter grow at a lower rate.

There were five posters allocated to this theme:

Doc. Z:09 examined the suitability of various fishing methods to capture hake, anglerfish (black and white), horse mackerel and mackerel and gives preliminary results.

Doc. Z:10 presented the result of a survival experiment of horse mackerel tagged in captivity.

Doc. Z:11 monitored the evolution of oocyte diameter and estimates of batch fecundity for hake in the Bay of Biscay.

Doc Z:12 presented an histological study of the gonadal development of armed gurnard.

Doc. Z:13 was a study of pigment transfer from phytoplankton to copepods in nutrient-enriched mesocosms.

Papers presented

Z:01	A. Arkhipkin and D. Middleton	Squid interspecific competition: possible impact of <i>Illex argentinus</i> onto <i>Loligo gahi</i> recruitment in the Southwest Atlantic
Z:02	D.P. Fey	Temperature and growth rate effect on the otolith size - fish size relationship estimated for Baltic herring from the Vistula Lagoon
Z:03	K. Helle, B. Bogstad, G. Ottersen, and M. Pennington.	Some environmental factors that influence the growth of Arcto-Norwegian cod from the early juvenile to the adult stage
Z:05	I. Psuty-Lipska	Eelpout as an index of changes in the fish community of Gdansk Bay in 1985-1999
Z:06	Yu.I., Bakay	Parasites and pigmented patches as indicators of intraspecific structure of <i>Sebastes mentella</i> in the Irminger Sea
Z:07	P. Percival, and C. Frid.	The impact of fishing disturbance on benthic nutrient regeneration and flux rate

Z:09 Poster	P. Lucio, M. Santurtun, and I. Quincoces	Tagging experiments on hake, anglerfish and other species in the Bay of Biscay
Z:10 Poster	P. Lucio, M. Santurun, A. Martínez Murgía, and I Quincoces	Experiments on horse mackerel in captivity. (An experiment of survival of this species tagged with external and internal tags).
Z:11 Poster	H. Murua, M. Santurtun, I Quincoces, and P. Lucio	Oocyte diameter evolution along the year and batch fecundity of hake in the Bay of Biscay (ICES Divisions VIIIa, b, d)
Z:12 Poster	A. Terrats, K. I. Stergiou, and G. Petrakis	Histological study of the gonadal development of armed gurnard, <i>Peristedion cataphractum</i> (L. 1758)
Z:13 Poster	L. Van Nieuwerburgh, I. Wänstrand, and P. Snoeijjs	Pigment transfer from phytoplankton to copepods in nutrient-enriched mesocosms

CLOSING OF THE SCIENTIFIC SESSIONS

Congress Centre Oud Sint-Jan, Brugge, Belgium
30 September 2000

The **General Secretary**, having called the meeting to order, thanked the Belgian hosts for the outstandingly successful arrangements and for the generous hospitality at the social events. He then introduced the President.

The **President** addressed the sessions as follows:

This session marks the close of the Annual Science Conference, but not of the Statutory Meeting. The Consultative Committee meets on Monday and part of Tuesday and the Delegates or Council for three days next week. But the ASC itself ends today.

This Conference has been an historic event, since it is the first ASC/Statutory Meeting to have been held in Belgium. We have had a very full and diverse program of scientific sessions. These have been exciting, interesting and stimulating. We hope that you found, among the many sessions, topics of interest to you.

ICES is a diverse organization with about 1600 scientists participating in its various activities during the course of a year. The ASC itself is, of course, but one part of ICES, but it is a vitally important part where scientific ideas are shared, debated, and frequently new initiatives launched as a result. Through the changes in recent years, we have been trying to separate the Science from the Business Sessions. We haven't succeeded completely yet. From my experience of the past three years, my personal view is that we need to consider reducing the overlap between the ASC and the Statutory Meeting so that Business Sessions don't conflict with Scientific Sessions. Meanwhile, the Annual Science Conference today is very different from what it was as recently as 1996, because of the recent improvements.

If you have suggestions for further changes or improvements, please pass your ideas along to me, the General Secretary, or the Chair of the Consultative Committee.

Many of you also participate in the 80+ Working Groups or the 9 Committees where most of the science and advisory business of ICES is conducted. For those of you new to the ASC, we hope that you have enjoyed it and that you will return to future Conferences.

In recent years, we have instituted Awards for Best Newcomer, Best Paper, and Best Poster. We now call upon Robin Cook, the Chair of the Consultative Committee, to announce this year's winners. When your name is announced, could you please come forward to receive the award. If the winner isn't here, could a colleague please accept on his or her behalf?

The Chair of the Consultative Committee (Robin Cook) explained that it had become a tradition in ICES to provide three awards, i.e. for Best Poster, for Best

Newcomer, and for Best Paper. As in the previous year, John Ramster (Editor of the ICES Newsletter) had been invited to convene a sub-group of people, representing the Science Committees, who had moved around the proceedings and discussed the various presentations before making selections. This year the committee had not been able to identify a clear winner for best poster so it was decided to make two awards to the joint winners. He then announced the prize winners for the awards, and he and the President presented the certificates:

Best Paper:

A. Bucklin, O. S. Atthorsson, A. Gislason, and P. Wiebe. *Calanus finmarchicus* in Icelandic waters: Population genetics and ecology at the Norwegian Sea/North Atlantic ocean boundary. ICES CM 2000/M:04.

Best Newcomer:

D. J. Beare and D. G. Reid. Investigating the complexity of spatio-temporal patterns evidenced in the triennial mackerel and horse-mackerel egg survey data. ICES CM 2000/K:04.

Best Posters:

Yves Samyn and Edward Vanden Berghe. Faunistics as the impetus for conservation of sea cucumbers (*Echinodermata: Holothuroidea*) in the littoral waters of Kenya. ICES CM 2000/Mini:14 Poster.

Paulino Lucio, M. Santurtun, and I. Quinoces. Tagging experiments on hake, anglerfish and other species in the Bay of Biscay. ICES CM 2000/Z:09 Poster.

The **President** resumed his address:

At this year's ASC we have elected or appointed several new Chairs of various Committees.

*Henk Heessen (Living Resources Committee)
Paul Keizer (Marine Habitat Committee)
Jean-Jacques Maguire (Resource Management Committee)
Franciscus Colijn (Oceanography Committee)
Robert Stephenson (Consultative Committee)*

I would like to thank the outgoing Chairs Robin Cook, Stig Carlberg, Colin Bannister, Rob Stephenson, Astrid Jarre, and Harald Loeng for their dedication and good work over the past three years and wish them well. Congratulations to the new Chairs. We look to them to help us steer ICES through the Centenary period.

Elections in the Council are not yet complete. But I am pleased that the Council has elected Pentti Mätkki of Finland, currently First Vice-President, as the next

President effective 1 November of this year. Pentti Mälkki has served both as Vice-President and First Vice-President of the Council. He has been involved with ICES for many years. Instead of passing the torch Pentti, I look forward to passing to you the burden of office as represented by this Chain with the names of your predecessors of the previous nearly 100 years. But with the burden comes the opportunity to serve ICES. You will take office at the beginning of the new century and will have the honour of presiding over the Centenary Celebration in 2002. You will also have the challenge and privilege of moving forward the agenda for the coming years. We wish you all the best in your new role as President.

I would also like to join David in thanking Rudy De Clerk, Georges Pichot and the many other Belgian colleagues for inviting us to hold this meeting here in the beautiful city of Brugge. We have been very impressed by the excellent facilities and arrangements and thank them and the people who have worked behind the scenes

to make this conference a success, for their support in organizing and running the meeting. We will all leave with fond memories of Belgium.

On a more personal note, this will be my last Annual Science Conference as President. My work as President is not yet over as we still have the Council meeting next week and many challenging issues to deal with. I have very much enjoyed my three years as President. My task has been made easier by the dedication and enthusiasm of all of you. I have made many good friends in ICES over the years and I look forward to continuing to work with you as I resume my role as Canadian Delegate to ICES in the coming year.

I hope to see you all at the Grand Conference Dinner this evening.

I also look forward to seeing you again in Oslo next year.

Have a safe journey home.

**LIST OF PARTICIPANTS AT THE 2000 ANNUAL SCIENCE CONFERENCE/
LISTE DES PARTICIPANTS À LA CONFÉRENCE SCIENTIFIQUE ANNUELLE 2000**

BELGIUM/BELGIQUE

Cyril Ajuzie
Université Libre de Bruxelles
CP 160
19 Ave. Roosevelt
1050 Bruxelles
Tel: +32 26 502713
Fax: +32 26 503595
E-mail: cyahams@excite.com

Peter Bossier
Agricultural Research Centre-
Ghent
Ankerstraat 1
8400 Oostende
Tel: +32 59 342266
Fax: +32 59 330629
E-mail: pbossier@yucom.be

Sam Ceulemans
INVE Technologies
Oeverstraat 7
9200 Baasrode
Tel: +32 52 331320
Fax: +32 52 334531
E-mail: s.ceulemans@inve.be

Johan Coenjaerts
Agricultural Research Centre-
Ghent
Ankerstraat 1
8400 Oostende
Tel: +32 59 342263
Fax: +32 59 330629
E-mail: coenjaerts@hotmail.com

Kris Cooreman
Agricultural Research Centre-
Ghent
Ankerstraat 1
8400 Oostende
Tel: +32 59 342251
Fax : +32 59 330629
E-mail: kcooreman@unicall.be

Peter Coutteau
INVE Technologies
Oeverstraat 7
9200 Baasrode
Tel: +32 95 680355
Fax: +32 95 6804355
E-mail:
petercoutteau@compuserve.com

Karien De Cauwer
MUMM
Gulledelle 100
1200 Brussels
Tel: +32 27 732137
Fax: +32 21 7706972
E-mail: k.decauwer@mumm.ac.be

Rudy De Clerck (Delegate)
Agricultural Research Centre-
Ghent
Ankerstraat 1
8400 Oostende
Tel: +32 59 34 22 60
Fax: +32 59 3306299
E-mail: rdeclerck@unicall.be

Daniel Declerck
Agricultural Research Centre-
Ghent
Ankerstraat 1
8400 Oostende
Tel: +32 59 342262
Fax: +32 59 330629
E-mail: ddeclerck@yucom.be

Steven Degraer
University of Ghent
Marine Biology Section
K.L. Ledeganckstraat 35
9000 Ghent
Tel: +32 92 645252
Fax: +32 92 645344
E-mail: steven.degraer@rug.ac.be

Daan Delbare
Agricultural Research Centre-
Ghent
Ankerstraat 1
8400 Oostende
Tel: +32 59 342264
Fax: +32 59 330629
E-mail: ddelbare@yucom.be

Wim Demare
Agricultural Research Centre-
Ghent
Ankerstraat 1
8400 Oostende
Tel: +32 59 342258
Fax: +32 59 330629
E-mail: wdemare@yucom.be

Mia de Volder
MUMM
Gulledelle 100
1200 Brussels
Tel: +32 27 732127
Fax: +32 27 706972
E-mail: m.devolder@mumm.ac.be

Fanny Dooms
Agricultural Research Centre-
Ghent
Ankerstraat 1
8400 Oostende
Tel: +32 59 342252
Fax: +32 59 3306299
E-mail: stefania.dooms@rug.ac.be

Mercedes Diana Erdey
University of Gent
Marine Biology Section
Ledeganckstraat 35
9000 Gent
Tel: +32 92 645252
Fax: +32 92 645344
E-mail: ermedi@yahoo.com

Ronald Fonteyne
Agricultural Research Centre-
Ghent
Ankerstraat 1
8400 Oostende
Tel: +32 59 342254
Fax: +32 59 330629
E-mail: rfonteyne@unicall.be

Jan Haelters
MUMM
3° en 23° Linieregimentsplein
8400 Oostende
Tel: +32 59 700131
Fax: +32 59 704935
j.haelters@mumm.ac.be

Hans Hillewaert
Agricultural Research Centre-
Ghent
Ankerstraat 1
8400 Oostende
Tel: +32 59 342259
Fax: +32 59 330629
E-mail: hhillewaert@unicall.be

Nolmans Jans
MUMM
Gulledelle 100
B-1200 Brussels
Tel: +32 27 732144

Michael Kyramarios
MUMM
Gulledelle 100
1200 Brussels
Tel: +32 27 732129
Fax: +32 27 706972

Jan Mees
Flanders Marine Institute (VLIZ)
Victorialaan 3
8400 Oostende
Tel: +32 59 342130
Fax: +32 59 342131
E-mail: jan.mees@vliz.be

Ahmed M'Harzi
Ecol (VUB) Free University
of Brussel, Pleinlaan 2
1050 Brussel
Tel: +32 26 293183
E-mail: ahmharzi@vub.ac.be

Georges Pichot (Delegate)
MUMM
Gulledelle 100
1200 Brussels
Tel: +32 27 732111
Fax: +32 27 706972
E-mail: g.pichot@mumm.ac.be

Hans Polet
Agricultural Research Centre-
Ghent
Ankerstraat 1
8400 Oostende
Tel: +32 59 342253
Fax: +32 59 330629
E-mail: hpolet@unicall.be

Marc Raemaekers
Agricultural Research Centre-
Ghent
Ankerstraat 1, 8400 Oostende
Tel: +32 59 342268
Fax: +32 59 330629
E-mail: mraemaek@yucom.be

Frank Redant
Agricultural Research Centre-
Ghent
Ankerstraat 1, 8400 Oostende
Tel: +32 59 342261
Fax: +32 59 330629
E-mail: fredant@mail.dma.be

Patrick Roose
MUMM
3^e en 23^e Linierregimentsplein
8400 Oostende
Tel: +32 59 700131
Fax: +32 59 704935

Yves Samyn
Free University Brussels
Laboratory for Ecology &
Systematics
Pleinlaan 2
1040 Brussels
Tel: +32 62 93352
Fax: +32 62 93303
E-mail: ysamyn@vub.ac.be

Jan Seys
Flanders Marine Institute
Victorialaan 3
8400 Oostende
Tel: +32 59 342130
Fax: +32 59 342131
E-mail: jan.seys@vliz.be

Edward Vanden Berghe
Vlaama Instituut voor de Zee
Victorialaan 3
8400 Oostende
Tel: +32 59 342130
Fax: +32 59 342131
E-mail: wardvdb@vliz.be

Vera Van Lancker
Universiteit Gent
Renvard Centre of Marine
Geology
Krijgslaan 281 S-8
9000 Gent
Tel: +32 92 644589
Fax: +32 92 644967
E-mail: vera.vanlancker@
rug.ac.be

Harry Van Loen
K.B.I.N
Vautierstraat 29
1000 Brussels
Tel: +32 26 274562
Fax: +32 26 274113
E-mail: vanloen@
bernie.kbinisrnsnb.be

Els Vanderperren
Agricultural Research Centre-
Ghent
Ankerstraat 1
8400 Oostende
Tel: +32 59 342267
Fax: +32 59 330629
E-mail:
vanderperren.els@online.be

Johnny Vanhee
Agricultural Research Centre-
Ghent
Ankerstraat 1
8400 Oostende
Tel: +32 59 342257
Fax: +32 59 330629
E-mail: jvanhee@yucom.be

Willy Vanhee
Agricultural Research Centre-
Ghent
Ankerstraat 1, 8400 Oostende
Tel: +32 59 342255
Fax: +32 59 330629
E-mail: wvanhee@unicall.be

Filip Volckaert
Katholieke Universiteit Leuven
Laboratory of Aquatic Ecology
Ch. de Beriotstraat 32
3000 Leuven
Tel: +32 16 323966
Fax: +32 16 324575
E-mail:
filip.volckaert@bio.kuleuven.ac.be

Bart De Wachter
ECOLAS NV
Lange Nieuwstraat 42
2000 Brussels
Tel: +32 32 330703
Fax: +32 32 338120
E-mail: bart.dewachter@ecolas.be

CANADA

John Anderson
Northwest Atlantic Fisheries
Centre
P.O. Box 5667
St Johns, NF A1C 5X1
Tel: +1 709 772 2116
Fax: +1 709 772 4188
E-mail: andersonjt@dfo-mpo.gc.ca

Paul Boudreau
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, NS B2Y 4A2
Tel: +1 902 426 7464
Fax: +1 902 426 6695
E-mail: Boudreaup@mar.dfo-mpo.gc.ca

Jim Boutillier
Fisheries and Oceans
Pacific Biological Station
Nanaimo, BC V9R 5K6
Tel: +1 250 756 7048
Fax: +1 250 756 7051
E-mail: Boutillierj@pac.dfo-mpo.gc.ca

Ray Bowering
Northwest Atlantic Fisheries
Centre,
P.O. Box 5667
St Johns, NF A1C 5X1
Tel: +1 709 772 2054
Fax: +1 709 772 4105
E-mail: bowering@dfo-mpo.gc.ca

Gerald Brothers
Northwest Atlantic Fisheries
Centre
P.O. Box 5667
St Johns, NF A1C X1
Tel: +1 709 772 4438
Fax: +1 709 772 2110
E-mail: brothersg@dfo-mpo.gc.ca

Scott Campell
Northwest Atlantic Fisheries
enter
P.O. Box 5667
St John's, NF A1C 5X1
Tel: +1 709 772 2000
Fax: +1 709 772 4105
E-mail: campells@dfo-mpo.gc.ca

Jim Carscadden
Northwest Atlantic Fisheries
Centre
P.O. Box 5667
St Johns, NF A1C 5X1
Tel: +1 709 772 5541
Fax: +1 709 772 4188
E-mail:
carscadden@athena.nwafc.nf.ca

John Castell
Dept. Fisheries & Oceans
Biological Station
531 Brandy Cove Road
St. Andrews, NB E5B 2L9
Tel: +1 506 529 5904
Fax: +1 506 529 5862
E-mail: castellj@mar.dfo-mpo.gc.ca

Ghislain Chouinard
Gulf Fisheries Centre
Dept. of Fisheries & Oceans
P.O. Box 5030
Moncton, NB E1C 9B6
Tel: +1 506 851 6220
Fax: +1 506 851 2620
E-mail: chouinardg@dfo-mpo.gc.ca

Eugene Colbourne
Northwest Atlantic Fisheries
Centre,
P.O. Box 5667
St Johns, NF A1C 5X1
Tel: +1 709 772 6106
Fax: +1 709 772 4105
E-mail: colbourne@dfo-mpo.gc.ca

Shelley Denny
Eskasoni Fish & Wildlife
Commission
4123 Shore Road
Eskasoni, NS BOA 1J0
Tel: +1 902 379 2024
Fax: +1 902 379 2159
E-mail: pla_mu@fox.nstn.ca

Ken Drinkwater
Bedford Institute of Oceanography
Box 1006
Dartmouth, NS B2Y 4A2
Tel: +1 902 426 2650
Fax: +1 902 426 6927
E-mail: drinkwaterk@mar.dfo-mpo.gc.ca

Réjean Dufour
Institut Maurice-Lamontagne
850 Route de la Mer, C.P. 1000
Mont-Joli, Quebec G5L 3Z4
Tel: +1 418 775 0623
Fax: +1 418 775 0740
E-mail: Dufourr@dfo-mpo.gc.ca

Jean-Denis Dutil
Institut Maurice-Lamontagne
850 Route de la Mer, C.P. 1000
Mont-Joli, Quebec G5L 3Z4
Tel: +1 418 775 0582
Fax: +1 418 775 0740
E-mail: dutiljd@dfo-mpo.gc.ca

Marcel Fréchette
Institut Maurice-Lamontagne
850 Route de la Mer, C.P. 1000
Mont-Joli, Quebec G5L 3Z4
Tel: +1 418 775 0625
Fax: +1 418 775 0740
E-mail: frechettem@dfo-mpo.gc.ca

Ann Gargett
Institute of Ocean Sciences
Patricia Bay, P.O. Box 6000
Sidney, BC V8L 4B2
Tel: +1 250 363 6554
Fax: +1 250 363 6746
E-mail: gargetta@pac.dfo-mpo.gc.ca

Donald Gordon
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, NS B2Y 4A2
Tel: +1 902 426 3278
Fax: +1 902 426 6695
E-mail: gordond@mar.dfo-mpo.gc.ca

Erica Head
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, NS B2Y 4A2
Tel: +1 902 426 2317
Fax: +1 902 426 9388
E-mail: heade@mar.dfo-mpo.gc.ca

Paul Keizer
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, NS B2Y 4A2
Tel: +1 902 426 6138
Fax: +1 902 426 6695
E-mail: keizerp@mar.dfo-mpo.gc.ca

Peter Koeller
Bedford Institute of Oceanography
Dartmouth, NS B2Y 4A2
Tel: +1 902 426 5379
Fax: +1 902 426 1862
E-mail: koellerp@mar.dfo-
mpo.gc.ca

David Kulka
Northwest Atlantic Fisheries
Centre
P.O. Box 5667
St. Johns, NF A1C 5X1
Tel: +1 709 772 2064
Fax: +1 709 772 5469
E-mail: Kulkad@dfo-mpo.gc.ca

J.-J. Maguire
Halieutikos Inc.
1450 Godefroy,
Sillery GIT 2E4
Tel: +1 418 688 5501
Fax: +1 418 688 7924
E-mail:
JJMaguire@compuserve.com

Allison McIsaac
Eskasoni Fish & Wildlife
Commission
4123 Shore Road
Eskasoni, NS BOA 1J0
Tel: +1 902 379 2024
Fax: +1 902 379 2159
E-mail: pla_mu@fox.nstn.ca

William Montevecchi
Biopsychology Program
Memorial University of
Newfoundland
St. John's, NF A1B 3X9
Tel: +1 709 737 7673
Fax: +1 709 737 4000
E-mail: mont@mun.ca

Daniel Pauly
Fisheries Centre, UBC
Vancouver, BC V6T 1Z4
Tel: +1 604 822 1201
Fax: +1 604 822 8934
E-mail: pauly@fisheries.com

Pierre Pepin
Northwest Atlantic Fisheries
Centre
P.O. Box 5667
St. Johns NF A1C 5X1,
Tel: +1 709 772 2081
Fax: +1 709 772 4188
E-mail: pepin@athena.nwafc.nf.ca

Jean Piuze (Delegate)
Institut Maurice-Lamontagne
850, Route de la Mer, C.P. 1000
Mont-Joli, Quebec G5H 324
Tel: +1 418 775 0597
Fax: +1 418 775 0718
E-mail: piuzej@dfo-mpo.gc.ca

Jake Rice
Canadian Stock Assessment
Secretariat
Fisheries Research Branch - DFO
200 Kent Street
Ottawa, Ontario K1A 0E6
Tel: +1 613 990 0288
Fax: +1 613 954 0807
E-mail: ricej@dfo-mpo.gc.ca

Laura Richards
Fisheries & Oceans
555 West Hastings St.
Vancouver, BC. V6B 5G3
Tel: +1 604 666 6746
Fax: +1 604 666 0340
E-mail: richardsl@pac.dfo-
mpo.gc.ca

Jeffrey Runge
Institute Maurice Lamontagne
850, Route de la Mer, C.P. 1000
Mont-Joli, Quebec G5H 324
Tel: +1 418 775 0676
Fax: +1 418 775 0546
E-mail: RungeJ@dfo-mpo.gc.ca

Robert Rutherford
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, NS B2Y 4AZ
Tel: +1 902 426 8398
Fax: +1 902 426 3855
E-mail: rutherfordb@mar.dfo-
mpo.gc.ca

Tom Sephton
Dept. of Fisheries & Oceans
Biological Station
531 Brandy Cove Road
St Andrews, NB E5B 2L9
Tel: +1 506 529 5860
Fax: +1 506 529 5862
E-mail: sephtont@mar.dfo-
mpo.gc.ca

Yvan Simard
Institute Maurice Lamontagne
850, Route de la Mer, C.P. 1000
Mont-Joli, Quebec G5H 324
Tel: +1 418 775 0527
Fax: +1 418 775 0542
E-mail: simardy@dfo-mpo.gc.ca

Michael Sinclair (Delegate)
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, NS B24 4A2
Tel: +1 902 426 3492
Fax: +1 902 426 8484
E-mail: sinclairm@mar.dfo-
mpo.gc.ca

Rob Stephenson
Dept. of Fisheries and Oceans
Biological Station
St Andrews, NB E0G 2X0
Tel: +1 506 529 3108
Fax: +1 506 529 5862
E-mail: stephenson@dfo-
mpo.gc.ca

Jean-Claude Therriault
Institut Maurice-Lamontagne
850 Route de la Mer, C.P. 1000
CP 1000 Mont-Joli, Quebec
Tel: +1 418 775 0595
Fax: +1 418 775 0546
E-mail: TherriaultJcSci@dfo-
mpo.gc.ca

Brian Thompson
Dept. of Fisheries & Oceans
1 Challenger Drive, P.O. Box 1006
Dartmouth, NS B2Y 4A2
Tel: +1 902 426 1510
Fax: +1 902 426 1489
E-mail: Thompsonb@mar.dfo-
mpo.gc.ca

Brian Todd
Geological Survey of Canada
P.O.Box 1006
Dartmouth, NS B2Y 4A2
Tel: +1 902 426 3407
Fax: +1 902 426 4104
E-mail: todd@agc.bio.ns.ca

Stephen J. Walsh
Northwest Atlantic Fisheries
Center
P.O. Box 5667
St John's, NF A1C 5X1
Tel: +1 709 772 5478
Fax: +1 709 772 4188
E-mail: walsh@athena.nwafc.nf.ca

Scott Wilson
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, NS B2Y 4AZ
Tel: +1 902 426 3318
Fax: +1 902 426 1506
E-mail: wilsons@mar.dfo-
mpd.gc.ca

Igor Yashayaev
Bedford Institute of Oceanography
1 Challenger Drive
Dartmouth, N.S. B2Y 4A2
Tel: +1 902 426 9963
Fax: +1 902 426 7827

Kees Zwanenburg
Bedford Institute of Oceanography
1 Challenger Drive
Dartmouth, N.S. B2Y 4A2
Tel: +1 902 426 3310
Fax: +1 902 426 1506
E-mail: zwanenburgk@mar.dfo-
mpd.gc.ca

DENMARK/DANEMARK

Michael Andersen
Danish Fisheries Association
H.C. Andersens Boulevard 37
1553 Copenhagen
Tel: +45 70 10 40 40
Fax: +45 33 32 32 38
E-mail: ma@fiskeriforening.dk

Jesper Boje
Greenland Institute of Natural
Resources
Pilestræde 52, Box 2151
1015 Copenhagen K
Tel: +45 33 69 34 60
Fax: +45 33 69 34 06
E-mail: jesper.boje@inet.uniz.dk

Poul Degnbol
IFM - Institute for Fisheries
Management
North Sea Centre,
Willemoesvej 2
9850 Hirtshals
Tel: +45 98 94 28 55
Fax: +45 98 94 42 68
E-mail: pd@ifm.dk

Henrik Gislason
DIFRES
Charlottenlund Castle
2920 Charlottenlund
Tel: +45 33 96 33 61
Fax: +45 33 96 33 33
E-mail: Hg@dfu.min.dk

Bogi Hansen
Faroe Fisheries Laboratory
Box 3051
FO-110 Torshavn
Faroe Islands
Tel: +298 315092
Fax: +298 318264
E-mail: bogihan@frs.fo

Michael Hansen
DFU
Dept. of Inland Fisheries
Vejlssøvej 39
8600 Silkeborg
Tel: +45 33 96 31 00
Fax: +45 33 96 31 50
E-mail: mmh@dfu.min.dk

Tine Hassager
Danish Institute for Fisheries
Research
Jægersborgvej 64-66
2800 Lyngby
Tel: +45 33 96 33 11
Fax: +45 33 96 33 49
E-mail: tkh@dfu.min.dk

René Holst
ConStat
Grønslettevej 10
9800 Hjørring
Tel: +45 98 92 19 79
Fax: +45 98 92 19 56
E-mail: rene@constat.dk

Holger Hovgård
DIFRES
Charlottenlund Slot
2920 Charlottenlund
Tel: +45 33 96 33 00
Fax: +45 33 96 33 33
E-mail: Hoh@dfu.min.dk

Hjalte Jakupsstovu
Faroe Fisheries Laboratory
P.O. Box 3051
FO-110 Torshavn
Faroe Islands
Tel: +298 315092
Fax: +298 318264
E-mail: hjaltij@frs.fo

Astrid Jarre
Greenlands Institute of
Natural Resources
P.O. Box 570
3900 Nuuk
Greenland
Tel: +299 321 095
Fax: +299 325957
e-mail: astrid@nature.gl

Regin Kristiansen
Faroe Fisheries Laboratory
P.O. Box 3051
FO-110 Torshavn
Faroe Islands
Tel: +298 315092
Fax: +298 318264
E-mail: regink@frs.fo

Karin Margretha Larsen
Faroe Fisheries Laboratory
P.O. Box 3051
FO-110 Torshavn
Faroe Islands
Tel: +298 315092
Fax: +298 318264
E-mail: karinl@frs.fo

Niels Madsen
Danish Institute for Fisheries
Research
North Sea Centre, 9850 Hirtshals
Tel: +45 33 96 32 00
Fax: +45 33 96 32 60
E-mail: nm@dfu.min.dk

Peter Munk
Danish Institute for Fisheries
Research
Charlottenlund Slot
2920 Charlottenlund
Tel: +45 33 96 34 09
Fax: +45 33 96 34 34
E-mail: pm@dfu.min.dk

Niels Axel Nielsen (Delegate)
Danish Institute for Fisheries
Research
Jaegersborgvej 64-66
2800 Lyngby
Tel: +45 33 96 33 01
Fax: +45 33 96 33 49
E-mail: nan@dfu.min.dk

Gorm Rasmussen
DFU
Dept. of Inland Fisheries
Vejlsøvej 39, 8600 Silkeborg
Tel: +45 33 96 31 00
Fax: +45 33 96 31 50
E-mail: gr@dfu.min.dk

Jakup Reinert
Faroe Fisheries Laboratory
Noatun 1
FO-110 Torshavn
Faroe Islands
Tel: +298 315092
Fax: +298 318264
E-mail: jakupr@frs.fo

Henrik Skov
ORNIS Consult A/S
Vesterbrogade 140
2620 Copenhagen
Tel: +45 33 31 84 64
Fax: +45 33 24 75 99
E-mail: hs@ornisconsult.dk

Michael St. John
Danish Institute for Fisheries
Research
Kavalergården 6
2920 Charlottenlund
Tel: +45 33 96 34 24
Fax: +45 33 96 34 34
E-mail: msj@dfu.min.dk

Josianne Støttrup
Danish Institute for Fisheries
Research
Charlottenlund Slot
2920 Charlottenlund
Tel: +45 33 96
Fax: +45 33 96
E-mail: jgs@dfu.min.dk

Helge Thomsen
Danish Institute for Fisheries
Research
Kavalergården 6
2920 Charlottenlund
Tel: +45 33 96 33 00
Fax: +45 33 96 34 34
E-mail: hat@dfu.min.dk

Morten Vinther
DIFRES
Charlottenlund Slot
2920 Charlottenlund
Tel: +45 33 96 33 00
Fax: +45 33 96 33 33
E-mail: mv@dfu.min.dk

Kai Wieland
Greenlands Institute of Natural
Resources
P.O. Box 570
3900 Nuuk, Greenland
Tel: +299 321095
Fax: +299 325957
E-mail: wieland@natur.gl

ESTONIA/ESTONIE

Robert Aps (Delegate)
Estonian Marine Institute
Viljandi Road 18B
11216 Tallinn
Tel: +372 6281568
Fax: +372 6281563
E-mail: robert.aps@ness.sea.ee

Ahto Jarvik
Estonian Marine Institute
Viljandi Road 18B
11216 Tallinn
Tel: +372 628 1590
Fax: +372 628 1563
E-mail: ahto@ness.sea.ee

Evald Ojaveer (Delegate)
Estonian Marine Institute
Viljandi Road 18B
11216 Tallinn
Tel: +372 6281568
Fax: +372 6281563
E-mail: e.ojaveer@ness.sea.ee

Henn Ojaveer
Estonian Marine Institute
Viljandi Road 18B
11216 Tallinn
Tel: +372 6281568
Fax: +372 6281563
E-mail: henn@sea.ee

Tiit Raid
Estonian Marine Institute
Viljandi Mnt. 18B
EE-11216 Tallinn
Tel: +372 6281603
Fax: +372 6281563
E-mail: raid@sea.ee

Toomas Saat
Estonian Marine Institute
Viljandi Road 18B
11216 Tallinn
Tel: +372 6281570
Fax: +372 6281563
E-mail: tsaat@sea.ee

FINLAND/FINLANDE

Kaisa Kononen
Maj and Tor Nessling Foundation
Fredrikinkath 20 B 16
00120 Helsinki
Tel: +358 9 4342 550
Fax: +358 9 4342 5555
E-mail: kaisa.kononen@nessling.fi

Pentti Mälkki (Delegate)
Finnish Institute of Marine
Research
P.O. Box 33
00931 Helsinki
Tel: +358 9 61394 400
Fax: 358 9 61394 494
E-mail: malkki@fimr.fi

Kai Myrberg
Finnish Institute of Marine
Research
P.O. Box 33
00931 Helsinki
Tel: +358 9 613 941
Fax: +358 9 613 944 94
E-mail: kai.myrberg@fimr.fi

Petri Suuronen (Delegate)

Finnish Game and Fisheries Research
Institute
P.O. Box 6
00721 Helsinki
Tel: +358 205 751 220
Fax: +358 205 751 201
E-mail: petri.suuronen@rktl.fi

FRANCE

Pascal Bach
Institut de Recherche pour le
Développement
Labo HEA
911 Av. Agropolis, BP 5045
34032 Montpellier
Tel: +33 467 419 400
Fax: +33 467 419 430
E-mail: Pascal.Bach@mpl.ird.fr

Robert Bellail
IFREMER
8 rue François Toullec
56100 Lorient
Tel: +33 297 873 819
Fax: +33 297 873 836
E-mail: robert.bellail@ifremer.fr

Nicolas Bez
Centre de Geostatistique de
Fontainebleau
35 Rue St Honoré
77305 Fontainebleau
Tel: +33 164 694 956
Fax: +33 164 694 705
E-mail: bez@cg.ensmp.fr

Alain Biseau
IFREMER
8 rue François Toullec
56100 Lorient
Tel: 33 297 873 820
Fax: +33 297 873 836
E-mail: alain.biseau@ifremer.fr

Alain Bodoy
IFREMER/CREMA
B.P. 5
17137 L'Houmeau
Tel: +33 546 500 613
Fax: +33 546 506 00
E-mail: abodoy@ifremer.fr

Jean Boucher
IFREMER
B.P. 70
29280 Plouzané
Tel: +33 298 224 615
Fax: +33 298 224 653
E-mail: jean.boucher@ifremer.fr

Marcel Chaussepied (Delegate)
IFREMER
Centre de Brest
B.P. 70, 29280 Plouzané
Tel: +33 298 224 323
Fax: +33 298 224 548
E-mail: marcel.chaussepied@
ifremer.fr

André Forest (Delegate)
IFREMER
B.P. 21105
Rue de l'Ile d'Yeu
44311 Nantes
Tel: +33 240 374 238
Fax: +33 240 374 045
E-mail: andre.forest@ifremer.fr

Patrick Gentien
IFREMER/CREMA
BP 5
17137 L'Houmeau
Tel: +33 546 500 630
Fax: +33 546 500 660
E-mail: pgentien@ifremer.fr

François Gerlotto
Institut de Recherche pour le
Développement, Labo HEA
911 Av. Agropolis, BP 5045
34032 Montpellier
Tel: +33 467 419 400
Fax: +33 467 419 430
E-mail:
Francois.Gerlotto@mpl.ird.fr

Philippe Goulletquer
IFREMER
B.P. 133
17390 La Tremblade
Tel: +33 546 369 836
Fax: +33 546 637 51
E-mail: pgoullet@ifremer.fr

Allain Gwenhael
ENSAR
65 rue de Saint Briec, CS 84215
35042 Rennes
Tel: +33 234 855 34
Fax: +33 223 485 535

Maurice Héral
IFREMER
B.P. 21105
Rue de l'Ile d'Yeu
44311 Nantes
Tel: +33 240 374 240
Fax: +33 240 374 033
E-mail: Maurice.Heral@ifremer.fr

S.J. Kaushik
INRA
Fish Nutrition Lab.
64310 Saint Pée-sur-Nivelle
Tel: +33 559 515 990
Fax: +33 559 545 152
E-mail: kaushik@st-pe.infra.fr

Noussithé Koueta
Université de Caen
Laboratoire de Biologie et
Biotechnologies Marines
14032 Caen
Tel: +33 231 565 596
Fax: +33 231 565 346
E-mail: Koueta@ibba.unicaen.fr

Jean-Claude Mahé
IFREMER
8 rue François Toullec
56100 Lorient
Tel: +33 297 873 818
Fax: +33 297 873 836
E-mail: Jean-
Claude.Mahe@ifremer.fr

Daniel Masson
IFREMER
Station de Rone les Bains
17390 La Tremblade
Tel: +33 546 367 607
Fax: +33 546 363 751
E-mail: daniel.masson@ifremer.fr

Alain Maucorps
6, rue de Candé
F-44800 Saint Herblain
Tel: +33 240 374 155
Fax: +33 240 374 033
E-mail:
alain.maucorps@freesurf.fr

Frédéric Menard
HEA/IRD
BP 5045
34032 Montpellier
Tel: +33 467 636 962
Fax: +33 467 638 778
E-mail: menard@ird.fr

Brigitte Milcendeau
IFREMER
BP 21105
Rue de l'Île d'Yeu
44311 Nantes Cedex 3
Tel: +33 240 374 001
Fax: +33 240 374 00
E-mail: bmlcend@ifremer.fr

Philippe Moguedet
IFREMER
8 rue François Toullec
56100 Lorient
Tel: +33 297 873 803
Fax: +33 297 873 836
E-mail:
Philippe.Moguedet@ifremer.fr

Pierre Petitgas
IFREMER
BP 21105
Rue de l'Île d'Yeu
44311 Nantes
Tel: +33 240 374 163
Fax: +33 240 374 075
E-mail: pierre.petitgas@ifremer.fr

Maria Rendas
IBS-CNRS
2000 Rte des Lucioles
BP 121
06903 Sophia Antipolis
Tel: +33 492 942 714
Fax: +33 492 942 896
E-mail: rendas@ibs.unice.fr

Jacques Rivoirard
Centre de Géostatistique de
Fontainebleau
35 Rue St Honoré
77305 Fontainebleau
Tel: +33 164 694 764
Fax: +33 164 694 705
E-mail: rivoi@cge.enscm.fr

Marie-Joelle Rochet
IFREMER
BP 21105
Rue de l'Île d'Yeu
44311 Nantes
Tel: +33 240 376 121
Fax: +33 240 374 075
E-mail: mjrochet@ifremer.fr

Richard Sabatié
ENSAR Halieutique
65 rue de Saint Bieuc
35042 Rennes
Tel: +33 223 485 538
Fax: +33 223 485 535

Robert Smith Bellail
IFREMER
8 rue François Toullec
56100 Lorient
E-mail: robert.bellail@ifremer.fr

François Thérêt
IFREMER
8 rue François Toullec
56100 Lorient
Tel: +33 297 873 829
Fax: +33 297 873 801
E-mail: francois.theret@ifremer.fr

Verena Trenkel
IFREMER
BP 21105
Rue de l'Île d'Yeu
44311 Nantes
Tel: +33 240 376 053
Fax: +33 240 374 075
E-mail: vtrenkel@ifremer.fr

Marion Verdoit
IFREMER
BP 21105
Rue de l'Île d'Yeu
44311 Nantes
Tel: +33 240 376 164
Fax: +33 240 374 075
E-mail: mverdoit@ifremer.fr

GERMANY/ALLEMAGNE

Sara Adlerstein
Universität Hamburg, IHF
Olbersweg 24
22767 Hamburg
Tel: +49 404 2838 6624
Fax: +49 404 2838 6618
E-mail: SAdlerstein@uni-hamburg.de

Uwe Böttcher
Institut für Ostseefischerei
An der Jägerbäk 2
18198 Rostock
Tel: +49 381 8103 22
Fax: +49 381 8104 45
E-mail: boettcher.ior@t-online.de

Franciscus Colijn
FTZ
Hafentörn
25761 Büsum
Tel: +49 483 4604 200
Fax: +49 483 4604 299
E-mail: colijn@ftz.west.ni-kiel.de

Volkert Dethlefsen
Bundesforschungsanstalt für
Fischerei
Institute für Fischereiökologie
Deichstr. 12
27472 Cuxhaven
Tel: +49 472 1380 34
Fax: +49 472 1535 83
E-mail: v.dethlefsen@t-online.de

Siegfried Ehrich
Bundesforschungsanstalt für
Fischerei
Institut für Seefischerei
Palmaille 9
22767 Hamburg
E-mail: ehrich.ish@bfa-fisch.de

Peter Ernst
Institut für Ostseefischerei
An der Jägerbäk 2
18069 Rostock
Tel: +49 403 8905 179
Fax: +49 403 8905 263
E-mail: ernst.ior@t-online.de

Stefan Garthe
Institut für Meereskunde
Düsternbrooker Weg 20
24105 Kiel
Tel: +49 431 5973 938
Fax: +49 431 5658 76
E-mail: sgarthe@ifm.uni-kiel.de

Cornelius Hammer
Bundesforschungsanstalt für
Fischerei
Institut für Seefischerei
Palmaille 9
22767 Hamburg
Tel: +49 403 8905 232
Fax: +49 403 8905 263
E-mail: hammer.ish@bfa.fisch.de

Hans-Harald Hinrichson
Institut für Meereskunde
Düsternbrooker Weg 20
24105 Kiel
Tel: +49 431 5973 925
Fax: +49 431 5658 76
E-mail: hhinrichson@ifm.uni-kiel.de

Hans-Stephan Jenke
Bundesforschungsanstalt für
Fischerei
Institut für Fischereiökologie
Wüstland 2
22589 Hamburg
Tel: +49 403 1908 600
E-mail: jenke.ifo@bfa-fisch.de

Hans-Christian John
Deutsches Zentrum für Marine
Biodiversität
Zoologisches Institut
Martin-Luther-King-Platz 3
20146 Hamburg
Tel: +49 404 2838 5642
Fax: +49 404 2838 3937
E-mail: hcjohn@zoologie.uni-hamburg.de

Friedrich Köster
Institut für Meereskunde
Düsternbrooker Weg 20
24105 Kiel
Tel: +49 431 5973 925
Fax: +49 431 5658 76
E-mail: fkoester@ifm.uni-kiel.de

Thomas Lang
Bundesforschungsanstalt für
Fischerei
Institute für Fischereiökologie
Deichstrasse 12
27472 Cuxhaven
Tel: +49 472 1380 34
Fax: +49 472 1535 83
E-mail: t.lang@t-online.de

Stephan Lutter
WWF International
North East Atlantic Programme
Am Guethpol 11
28757 Bremen
E-mail: lutter@wwf.de

Wolfgang Matthäus
Institut für Ostseeforschung
Seestrass 15
18119 Warnemünde
Tel: +49 381 5197 140
Fax: +49 381 5197 440
E-mail: wolfgang.matthaeus@io-warnemuende.de

Hildrun Müller
Institut für Ostseefischerei
An der Jägerbäk 2
18069 Rostock
Tel: +49 381 8102 49
Fax: +49 381 8104 45
E-mail:
114767.1616@compuserve.com

Rainer Oeberst
Institut für Ostseefischerei
An der Jägerbäk 2
1869 Rostock
Tel: +49 381 8103 48
Fax: +49 381 8104 45
E-mail:
114602.1637@compuserve.com

Alfred Post (Delegate)
Bundesforschungsanstalt für
Fischerei
Palmaille 9
22767 Hamburg
Tel: +49 403 8905 168
Fax: +49 403 8952 63
E-mail: post.ish@bfa-fisch.de

Lutz Postel
Institut für Ostseeforschung
Seestrass 15
18119 Warnemünde
Tel: +49 381 5197 206
Fax: +49 381 5197 440
E-mail: lutz.postel@io-warnemuende.de

Otto Rechlin
Institut für Ostseefischerei
An der Jägerbäk 2
18069 Rostock
Tel: +49 381 8103 44
Fax: +49 381 8104 45
E-mail: rechlin.ior@t-online.de

Heye Rumohr
Institut für Meereskunde
Düsternbrooker Weg 20
24105 Kiel
Tel: +49 431 5973 957
Fax: +49 431 5973 994
E-mail: hrumohr@ifm.uni-kiel.de

Doris Schiedek
Institut für Ostseeforschung
Seestrass 15
18119 Warnemünde
Tel: +49 381 5197 205
Fax: +49 381 5197 440
E-mail: doris.schiedek@io-warnemuende.de

Dietrich Schnack (Delegate)
Institut für Meereskunde
Düsternbrooker Weg 20
24105 Kiel
Tel: +49 431 5973 910
Fax: +49 431 5658 76
E-mail: dschnack@ifm.uni-kiel.de

Axel Temming
Institut für Hydrobiologie und
Fischereiwissenschaft
Olbersweg 24
22767 Hamburg
Tel: +49 404 2838 6620
Fax: +49 404 2838 6618
E-mail: atemming@uni-hamburg.de

Norbert Theobald
Federal Maritime and
Hydrographic Agency
Bernhard-Nocht Str. 78
22305 Hamburg
Tel: +49 403 1903 350
Fax: +49 403 1905 033
E-mail: theobald@bsh.d400.de

Rüdiger Voss
Institut für Meereskunde
Düsternbrooker Weg 20
24105 Kiel
Tel: +49 431 5973 927
Fax: +49 431 5658 76
E-mail: rvoss@ifm.uni-kiel.de

Uwe Waller
Institut für Meereskunde
Düsternbrooker Weg 20
24105 Kiel
Tel: +49 491 5974 035
Fax: +49 431 5974 035
E-mail: uwaller@ifm.uni-kiel.de

Helmut Winkle
Universität Rostock
FBBIO/Zoologie
Uniplatz 5
18055 Rostock
Tel: +49 381 4981 945
E-mail: hw@fibio.physik2.uni-
rostock.de

Werner Wosniok
University of Bremen
Institute of Statistics
PO Box 330440
28334 Bremen
Tel: +49 421 2183 471
Fax: +49 421 2184 020
E-mail: wwosniok@math.uni-
bremen.de

Walter Zenk
Institut für Meereskunde
Düsternbrooker Weg 24
24105 Kiel
Tel: +49 5973892
Fax: +49 5973891
E-mail: wzenk@ifm.uni-kiel.de

ICELAND/ISLANDE

Gavin Begg
Marine Research Institute
P.O. Box 1390, Skúlagata 4
101 Reykjavík
Tel: +354 552 0240
Fax: +354 562 3790
E-mail: gavin@hafro.is

Einar Hjorleifsson
Marine Research Institute
P.O. Box 1390, Skúlagata 4
101 Reykjavík
Tel: +354 552 0240
Fax: +354 562 3790
E-mail: einar@hafro.is

Sigurdur Tor Jónsson
Marine Research Institute
P.O. Box 1390, Skúlagata 4
101 Reykjavík
Tel: +354 552 0240
Fax: +354 562 3790
E-mail: sigurdur@hafro.is

Astthor Gislason
Marine Research Institute
P.O. Box 1390, Skúlagata 4
101 Reykjavík
Tel: +354 552 0240
Fax: +354 562 3790
E-mail: astthor@hafro.is

Arni Isaksson
Directorate of Freshwater Fisheries
7 Vagnhofdi
110 Reykjavík
Tel: +354 567 6400
Fax: +354 567 8850
E-mail: arni@veidimalastjori.is

Jóhan Sigurjónsson (Delegate)
Marine Research Institute
P.O. Box 1390, Skúlagata 4
101 Reykjavík
Tel: +354 552 0240
Fax: +354 562 3790
E-mail: johann@hafro.is

Karl Gunnarsson
Marine Research Institute
P.O. Box 1390, Skúlagata 4
101 Reykjavík
Tel: +354 552 0240
Fax: +354 562 3790
E-mail: karl@hafro.is

Jakob Jakobsson (Delegate)
Marine Research Institute
P.O. Box 1390, Skúlagata 4
101 Reykjavík
Tel: +354 552 0240
Fax: +354 562 3790
E-mail: jakjak@hafro.is

Lorna Taylor
Marine Research Institute
P.O. Box 1390
121 Reykjavík
Tel: +354 5520240
Fax: +354 5623790
E-mail: lorna@hafro.is

IRELAND/IRLANDE

Paul Connolly (Delegate)
Marine Institute
Abbotstown
15 Dublin
Tel: +353 18 210 111
Fax: +353 18 205 078
E-mail: paul.connolly@marine.ie

Jacqueline Doyle
Marine Institute
Abbotstown
15 Dublin
Tel: +353 18 210 111
Fax: +353 18 205 078
E-mail:
jacqueline.doyle@marine.ie

Leonie Dransfeld
Marine Institute of Ireland
Abbotstown Laboratory
Snugborough Road
15 Dublin
Tel: +353 18 210 111
Fax: +353 18 205 078
E-mail:
leonie.dransfeld@marine.ie

John Joyce
Marine Institute
Abbotstown, Castleknock
15 Dublin
Tel: +353 18 228 208
Fax: +353 18 205 078
E-mail: john.joyce@marine.ie

Evin McGovern
Marine Institute
Abbotstown
15 Dublin
Tel: +353 18 228 200
Fax: +353 18 205 078
E-mail: evin.mcgovern@marine.ie

Dan Minchin
Marine Organism Investigations
3 Marine Village
Co. Clare
Tel: +353 61 375 777
E-mail: minchin@indigo.ie

Sara-Jane Moore
Marine Institute
Abbotstown
15 Dublin
Tel: +353 18 228 200
Fax: +353 18 205 078
E-mail:
Sara.jane.moore@marine.ie

Shane O'Boyle
National University of Ireland
Martin Ryan Marine Science Inst.
Galway
Tel: +353 91 524 411
Fax: +353 91 525 005
E-mail:
shane.oboyle@nuigalway.ie

Micheal Ó Cinnéide (Delegate)
Marine Institute
Abbotstown
15 Dublin
Tel: +353 18 228 113
Fax: +353 18 205 078
E-mail:
micheal.ocinneide@marine.ie

Rick Officer
Marine Institute
Abbotstown
15 Dublin
Tel: +353 18 210 111
Fax: +353 18 205 078
E-mail: rick.officer@marine.ie

Dr Niall O'Maoileidigh
Marine Institute of Ireland
Abbotstown
15 Dublin
Tel: +353 18 210 111
Fax: +353 18 205 078
E-mail:
niall.omaoidigh@marine.ie

Ken Whelan
Marine Institute
Newport
Co. Mayo
Tel: +353 98 411 07
Fax: +353 98 411 07
E-mail: kwhelan@iol.ie

LATVIA/LETONIE

Tatjana Baranova
Latvian Fisheries Research
Institute
Daugavgrivas 8
1007 Riga
Tel: +371 761 0766
Fax: +371 761 6946
E-mail: tan@latfri.lv

Georgs Kornilovs
Latvian Fisheries Research
Institute
Daugavgrivas 8
1007 Riga
Tel: +371 761 3775
Fax: +371 761 6946
E-mail: georgs-k@latfri.lv

Andrejs Makarchouks
Latvian Fisheries Research
Institute
Daugavgrivas 8
1007 Riga
Tel: +371 761 3775
Fax: +371 761 6946
E-mail: andrei@latfri.lv

Maris Plikshs
Latvian Fisheries Research
Institute
Daugavgrivas 8
1007 Riga
Tel: +371 761 0766
Fax: +371 761 6946
E-mail: mazis@latfri.lv

Normunds Riekstins (Delegate)
National Board of Fisheries of
2 Republikas Laukums
LV 1010 Riga
Tel: +371 732 3877
Fax: +371 733 4892
E-mail: fish@com.latnet.lv

Danute Uzars
Latvian Fisheries Research
Institute
Daugavgrivas 8
1007 Riga
Tel: +371 76 10766
Fax: +371 761 6946
E-mail: dana@latfri.lv

Maris Vitins (Delegate)
Latvian Fisheries Research
Institute
Daugavgrivas 8
1007 Riga
Tel: +371 761 2409
Fax: +371 761 6946
E-mail: m_vitins@latfri.lv

NETHERLANDS/PAYS BAS

Gerard van Balsfoort (Delegate)

Ministry of Agriculture, Nature
Management and Fisheries
Department for Fisheries
P.O. Box 20401
2500 EK The Hague
Tel: +31 703 785 227
Fax: +31 703 786 153
E-mail:
G.J.van.Balsfoort@Viss.Agro.NI

Joop F. Bakker
Rijksinstituut voor kust en zee
Postbus 20907
2500 Den Haag
Tel: +31 505 331 369
E-mail:
j.f.bakker@rikz.rws.minvenw.nl

Cees J.A. Barel
Ministry of Agriculture, Nature
Management and Fisheries
2500 EK The Hague
Tel: +31 703 784 109
Fax: +31 703 486 153
E-mail: c.j.a.barel@viss.agro.nl

Loes Bolle
RIKZ/National Institute for
Coastal and Marine Management
Postbus 68
1970 AB IJmuiden

Marja Bruisschaart
Netherlands Institute for Fisheries
Research
Postbus 68
1970 AB IJmuiden
Tel: +31 255 564 666
Fax: +31 255 564 644
E-mail: marja@rivo.wag_ur.nl

Johan Craeymeersch
Netherlands Institute for Fisheries
Research
Postbus 68
1970 AB IJmuiden
Tel: +31 255 564 646
Fax: +31 255 564 644

Niels Daan
Netherlands Institute for Fisheries
Research
P.O. Box 68
1970 AB IJmuiden
Tel: +31 255 564 646
Fax: +31 255 564 644
E-mail: niels@rivo.dlo.nl

Sebastiaan J.de Groot
Aquaculture Research
P.O. Box 97
2080 AB Santpoort-Zuid
Tel: +31 235 370 769
Fax: +31 235 393 334
E-mail: grootares@hetnet.nl

Dick de Jong
National Institute for Coastal &
Marine Management
PO Box 8039
4330 EA Middelburg
Tel: +31 118 672 284
Fax: +31 118 651 046
E-mail:
D.J.dJong@rikz.rws.MinVenW.nl

Guus Eltink
Netherlands Institute of Fisheries
Research
P.O. Box 68
1970 AB IJmuiden
Tel: +31 255 564 691
Fax: +31 255 564 644
E-mail: guus@rivo.wag_ur.nl

Karel Essink
National Institute for Coastal &
Marine Management
PO Box 207, 9750 AE Haren
Tel: +31 505 331 373
Fax: + 31 505 340 772
E-mail:
k.essink@rikz.rws.minvenw.nl

Henk Heessen
Netherlands Institute of Fisheries
Research
Postbus 68
1970 AB IJmuiden
Tel: +31 255 564 692
Fax: +31 255 564 644
E-mail: h.j.l.heessen@rivo.dlo.nl

Carlo Heip
NIOO-CEMO
P.O. Box 140
4400 AC Yerseke
Tel: +31 113 577 455
Fax: +31 113 573 616
E-mail: heip@cemo.nioo.knaw.nl

Eric Jagtman
RIKZ/National Institute for
Coastal and Marine Management
P.O. Box 20907
2500 EX The Hague
Tel: +31 703 114 217
Fax: +31 703 114 200
E-mail:
e.jagtman@rikz.rws.minvenw.nl

Pauline Kamermans
Netherlands Institute for Fisheries
Research
Centre for Shellfish Research
PO Box 77
4400 AB Yerseke
Tel: +31 113 672 302
Fax: +31 113 573 477
E-mail: pauline@rivo.wag-ur.nl

Maarten Knoester (Delegate)
RIKZ
P.O. Box 20907
2500 EX The Haueg
Tel: +31 703 114 250
Fax: +31 703 114 321
E-mail:
m.knoester@rikz.rws.minvenw.nl

Ronald Lanter
RIKZ
P.O. Box 20907
2500 EX The Haueg
Tel: +31 703 114 324
Fax: +31 703 114 300

Martin Pastoors
Netherlands Institute for Fisheries
Research
Postbus 68
1970 AB IJmuiden
Tel: +31 255 564 692
Fax: +31 255 564 644
E-mail: martin@rivo.dlo.nl

Gerjan Piet
RIVO
Postbus 68
1970 AB IJmuiden
Tel: +31 255 564 692
Fax: +31 255 564 644
E-mail: g.j.piet@rivo.dlo.nl

Adriaan Rijnsdorp
RIVO/Netherlands Institute for
Fisheries Research
Postbus 68
1970 AB IJmuiden
Tel: +31 255 564 692
Fax: +31 255 564 644
E-mail: a.d.rijnsdorp@rivo.dlo.nl

Frans van Beek
Netherlands Institute for Fisheries
Research
Postbus 68
1970 AB IJmuiden
E-mail: vbeek@rivo.wag-ur.nl

Henk Van der Veer
Netherlands Institute for
Fisheries Research
P.O. Box 59
1790 AB Den Burg Texel
Tel: +31 222 369 575
Fax: +31 222 319 674
E-mail: veer@nioz.nl

Bob van Marlen
Netherlands Institute for Fisheries
Research
Postbus 68
1970 AB IJmuiden
Tel: +31 255564646
E-mail: b.vanmarlen@rivo.wag-
ur.nl

Monica Verbeek
Seas at Risk
Drieharingenstraat 25
3511 BH Utrecht
Tel: +31 214 647 255
Fax: +31 214 647 255
E-mail: mverbeek@seas-at-
risk.org

Paddy Walker
RIKZ
Postbus 207
9750 AE Haren
Tel: +31 503 533 1329
Fax: +505 340 772
E-mail:
p.walker@rikz.ws.minvenw.nl

NORWAY/NORVÈGE

Michaela Aschan
Norwegian Institute of Fisheries
9291 Tromsø
Tel: +47 77 629 000
Fax: +47 77 629 100
E-mail:
Michaela.Aschan@Fisktorsk.nonet.
.no

Åsmund Bjørdal
Institute of Marine Research
PO Box 1870
5817 Bergen
Tel: +47 55 238 690
Fax: +47 55 238 687
E-mail: aasmund.bjoridal@imr.no

Arne Bjørge
Institute of Marine Research
Box 1870
5817 Bergen
Tel: +47 55 238 608
Fax: +47 55 238 617
E-mail: arne.bjorge@imr.no

Vivian Buehler
Institute of Marine Research
Flødevigen Research Station
4718 His
Tel: +47 370 590 25
Fax: +47 370 599 01
E-mail: vivian@imr.no

Jørgen Schou Christiansen
University of Tromsø
Institute of Aquatic Resources and
Environmental Biology
Breivika, 9037 Tromsø
Tel: +47 77 646 000
Fax: +47 77 646 020
E-mail: joergenc@nfh.uit.no

Are Edvardsen
University of Tromsø
9037 Tromsø
Tel: +47 77 646 113
E-mail: edvard@nfh.uit.no

Anders Fernø
University of Bergen
Dept. of Fisheries & Marine
Biology
5020 Bergen
Tel: +47 55 5844 00
Fax: +47 55 584 450
E-mail: anders.ferno@ifm.uib.no

Svein-Erik Fevolden
Norwegian College of Fishery
Science
University of Tromsø
9037 Tromsø
Tel: +47 77 644 500
Fax: +47 77 646 020
E-mail: sveinf@nfh.uit.no

Øyvind Fiksen
Dept. of Fisheries and Marine
Biology
P.O. Box 7800
5020 Bergen
Tel: +47 55 584 624
Fax: +47 55 584 450
E-mail: oyvind.fiksen@ifm.uib.no

Lars Føyn
Institute of Marine Research
P.O. Box 1870, Nordnes
5817 Bergen
Tel: +47 55 238 501
Fax: +47 55 238 584
E-mail: lars@imr.no

Olav Rune Godø
Institute of Marine Research
P.O. Box 1870, Nordnes
5817 Bergen
Tel: +47 55 238 500
Fax: +47 55 238 687
E-mail: olavrune@imr.no

Helge Hammersland
Scantrol
Midtunheia 22
5224 Bergen
Tel: +47 55 105 480
Fax: +47 55 105 430
E-mail: helge@scantrol.no

Johannes Hamre
Institute of Marine Research
PO Box 1870
5817 Bergen
Tel: +47 55 238 500
Fax: +47 55 238 687
E-mail: Johannes.Hamre@imr.no

Pia Kupka-Hansen
Institute of Marine Research
PO Box 1870
5817 Bergen
Tel: +47 55 236 355
Fax: +47 55 236 379
E-mail: pia.kupka.hansen@imr.no

Tom Hansen
Institute of Marine Research
Matre Aquaculture Research
Station
5984 Matredal
Tel: +47 56 366 040
Fax: +47 56 366 151
E-mail: tom.hansen@imr.no

Tore Haug
Norwegian Institute of Fisheries
and Aquaculture
9291 Tromsø
Tel: +47 77 629 220
Fax: +47 77 629 100
E-mail: toreh@fiskforsk.norut.no

Gro-Ingunn Hemre
Institute of Nutrition
P.O. Box 185, Sentrum
5804 Bergen
Tel: +47 55 238 263
Fax: +47 55 238 095
E-mail: gro-
ingunn.hemre@nutr.fiskeridir.no

Kjellrun Hiis Hauge
Institute of Marine Research
PO Box 1870
5817 Bergen
Tel: +47 55 238 590
Fax: +47 55 238 687
E-mail: kjellrun@imr.no

Nina Hedlund
The Research Council of Norway
PO Box 2700, St Hanshaugen
0131 Oslo
Tel: +47 22 037 000
Fax: +47 22 037 104
E-mail: nh@forskningsradet.no

Kristin Helle
Institute of Marine Research
PO Box 1870
5817 Bergen
Tel: +47 55 238 601
Fax: +47 55 238 687
E-mail: Kristin.Helle@imr.no

Jens Holm
Institute of Marine Research
Austevoll Aquaculture Research
Station
5392 Storebø
Tel: +47 56 180 342
Fax: +47 56 180 398
E-mail:
jens.christian.holm@imr.no

Lars Horn
Research Council of Norway
Stenshergt. 26
0131 Oslo
Tel: +47 22 037 094
Fax: +47 22 037 104
E-mail: lho@forskningsradet.no

Odd-Børre Humborstad
Institute of Marine Research
PO Box 1870 Nordnes
5817 Bergen
Tel: +47 55 236 939
Fax: +47 55 236 830
E-mail: oddb@imr.no

Ketil Hylland
Norwegian Institute for Water
Research
Brekkevn 19, PO Box 173, Kjellås
0411 Oslo
Tel: +47 22 185 170
Fax: +47 22 185 200
E-mail: ketil.hylland@niva.no

Arne Johannessen
University of Bergen
Dept of Fisheries & Marine
Biology
Bergen High Technology Centre
5020 Bergen
Tel: +47 55 584 400
Fax: +47 55 584 450
E-mail:
Arne.Johannessen@ifm.uib.no

Rune Johansen
University of Oslo
Div. Zool
P.O. Box 1050, Blindern
0316 Oslo
Tel: +47 22 858 375
Fax: +47 22 854 605
E-mail: rune.johansen@bio.uio.no

Olav Sigurd Kjesbu
Institute of Marine Research
P.O.Box 1870, Nordnes
5817 Bergen
Tel: +47 55 238 500
Fax: +47 55 238 584
E-mail: olav.kjesbu@imr.no

Cecilie Kvamme
Institute of Marine Research
PO Box 1870 Nordnes
5817 Bergen
Tel: +47 55236931
Fax: +47 55 236 830
E-mail: Cecilie.Kvamme@imr.no

Kyrre Lekve
University of Oslo
Div. Zool, P.O. Box 1050
0316 Oslo
Tel: +47 22 858 254
Fax: +47 22 854 605
E-mail: kyrre.lekve@bio.uio.no

Harald Loeng
Institute of Marine Research
P.O. Box 1870, Nordnes
5817 Bergen
Tel: +47 55 238 466
Fax: +47 55 238 584
E-mail: harald.loeng@imr.no

Svein Løkkeborg
Institute of Marine Research
P.O. Box 1870
5817 Bergen
Tel: +47 55 236 826
Fax: +47 55 236 830
E-mail: svein.lokkeborg@imr.no

Anne-Katrine Lundebye Haldorsen
Institute of Nutrition,
Directorate of Fisheries
P.O. Box 185 Sentrum
5804 Bergen
Tel: +47 55 238 000
Fax: +47 55 238 095
E-mail:
anne.haldorsen@nutr.fiskeridir.no

Gro van der Meeren
Institute of Marine Research
Austevoll Marine Research
Station
5392 Storebø
E-mail:
Gro.van.der.meeren@imr.no

Webjørn Melle
Institute of Marine Research
Nordnesgt 50
5817 Bergen
Tel: +47 55 238 477
Fax: +47 55 238 584
E-mail: webjorn@imr.no

Prof. Ole Arvid Misund
Institute of Marine Research
P.O. Box 1870
5817 Bergen
Tel: +47 55 236 805
Fax: +47 55 236 830
E-mail: olem@imr.no

Sigmund Myklevoll
Institute of Marine Research
PO Box 1870
5817 Bergen
Tel: +47 55 238 696
Fax: +47 55 238 687
E-mail:
sigmund.myklevoll@imr.no

Odd Nakken
Institute of Marine Research
1870 Bergen
Tel: +47 55 238 500
Fax: +47 55 238 687
E-mail: odd.nakken@imr.no

Kjell Nedreaas
Institute of Marine Research
PO Box 1870
5817 Bergen
Tel: +47 55 238 671
Fax: +47 55 238 687
E-mail: Kjell.nedreaas@imr.no

Kjell Tornard Nilssen
Norwegian Institute of Fisheries
and Aquaculture
9291 Tromsø
Tel: +47 77 629 000
Fax: +47 77 629 100
E-mail: kjelltn@fiskforsk.norut.no

Thomas Noji
Institute of Marine Research
P.O. Box 1870
N-5817 Bergen
Tel: +47 55 238 500
Fax: +47 55 238 584
E-mail: thomas.noji@imr.no

John Pope
University of Tromsø
Norwegian College of Fishery
Science
9037 Tromsø
or
The Old Rectory
Burgh St Peter, Suffolk
NR34 OBT, United Kingdom
Tel. and Fax: +44 1502 677377
E-mail: popejg@aol.com

Kjell Olsen (Delegate)
University of Tromsø
Norwegian College of Fishery
Science
9037 Tromsø
Tel: +47 77 646 001
Fax: +47 77 646 020
E-mail: kjello@nfh.uit.no

Michael Pennington
Institute of Marine Research
PO Box 1870
5817 Bergen
Tel: +47 55 236 309
Fax: +47 55 238 687
E-mail: michael@imr.no

Tone Rasmussen
University of Tromsø
Norwegian College of Fishery
Science
Hagebyveien 66
9404 Harstad
Tel: +47 77 061 297

Tore Riise
Royal Ministry of Fisheries
PO Box 8118
0032 Oslo
Tel: +47 22 246 454
Fax: +47 22 249 585
E-mail: tore.riise@fik.dep.no

Ingolf Røttingen
Institute of Marine Research
PO Box 1870
5817 Bergen
Tel: +47 55 238 404
Fax: +47 55 238 687
E-mail: ingolf@imr.no

Are Salthaug
Institute of Marine Research
PO Box 1870
5817 Bergen
Tel: +47 55 238 673
Fax: +47 55 238 687
E-mail: ares@imr.no

Per Sandberg
Fiskeridirektoratet
Strandgaten 229, Postboks 185,
Sentrum
5804 Bergen
Tel: +47 55 238 000
Fax: +47 55 238 090
E-mail:
per.sandberg@fiskeridir.dep
telemax.no

Dag Slagstad
SINTEF
Civil and Environmental
Engineering
Klaebuaveien 153
7465 Trondheim
Tel: +47 73 592 407
Fax: +47 73 592 376
E-mail:
dag.slagstad@civil.sintef.no

Aril Slotte
Institute of Marine Research
P.O. Box 1870, Nordnes
5817 Bergen
Tel: +47 55 238 422
Fax: +47 55 238 555
E-mail: aril@imr.no

Boonchai Stensholt
Institute of Marine Research
PO Box 1870
5817 Bergen
Tel: +47 55 238 667
Fax: +47 55 238 687
E-mail: boonchai@imr.no

Terje Svaasand
Institute of Marine Research
Dept. of Aquaculture
PO Box 1870
5817 Bergen
Tel: +47 55 236 891
Fax: +47 55 236 379
E-mail: terje.svaasand@imr.no

Bitten Sveri
Ministry of Fisheries
P.O. Box 8118
0032 Oslo
Tel: +47 22 246 410
Fax: +47 22 242 688
E-mail: bitten.sveri@fid.dep.no

Kurt Tande
University of Tromsø
Norwegian College of Fishery
Science
Breivika, 9037 Tromsø
Tel: +47 77 644 524
Fax: +47 77 646 020
E-mail: kurt@nfh.uit.no

Trond Thangstad
Institute of Marine Research
P.O. Box 1870, Nordnes
5817 Bergen
Tel: +47 55 238 631
E-mail: trond@imr.no

Roald Vaage (Delegate)
Institute of Marine Research
P.O. Box 1870
5817 Bergen
Tel: +47 55 238 500
Fax: +47 55 238 586
E-mail: roald.vaage@imr.no

POLAND/POLOGNE

Eugeniusz Andrulowicz
Sea Fisheries Institute
Kollataja Street 1
81-332 Gdynia
Tel: +48 58 620 1748 ext. 146
Fax: +48 58 620 2831
E-mail: eugene@mir.gdynia.pl

Dariusz Fey
Sea Fisheries Institute
Kollataja Street 1
81-332 Gdynia
Tel: +48 58 620 1728
Fax: +48 58 620 2831
E-mail: dfey@mir.gdynia.pl

Jan Horbowy
Sea Fisheries Institute
Kollataja Street 1
81-332 Gdynia
Tel: +48 58 620 1748
Fax: +48 58 620 2831
E-mail: horbowy@mir.gdynia.pl

Tomasz Linkowski (Delegate)
Sea Fisheries Institute
Kollataja Street 1
81-332 Gdynia
Tel: +48 58 620 2825
Fax: +48 58 620 2831
E-mail: tlink@mir.gdynia.pl

Piotr Margonski
Sea Fisheries Institute
Kollataja Street 1
81-332 Gdynia
Tel: +48 58 620 1728
Fax: +48 58 620 2831
E-mail: pmargon@mir.gdynia.pl

Iwona Psuty-Lipska
Sea Fisheries Institute
Kollataja Street 1
81-332 Gdynia
Tel: +48 58 620 1728
Fax: +48 58 620 2831
E-mail: iwcia@mir.gdynia.pl

Anna Was
Sea Fisheries Institute
Kollataja Street 1
81-332 Gdynia
Tel: +48 58 620 1728
Fax: +48 58 620 2831
E-mail: wanna@mir.gdynia.pl

PORTUGAL

Manuela Azevedo
IPIMAR
Avenida de Brasilia
1449-006 Lisbon
Tel: +351 2 130 27000
Fax: +351 2 130 15948
E-mail: mazevedo@ipimar.pt

Maria Fatima Borges
IPIMAR
Avenida de Brasilia
1449-006 Lisbon
Tel: +351 2 130 27000
Fax: +351 2 130 15948
E-mail: mfborges@ipimar.pt

João Dias
ADETTI/ISCITE
Av. Forcas Armadas
1649-026 Lisboa
Tel: +351 9 3845 0825
Fax: +351 2 179 35300
E-mail: fdias@iscite.pt

José Filipe
ADETTI/ISCITE
Av. Forcas Armadas
1649-026 Lisboa
Tel: +351 2 179 35300
E-mail: jcfilipe@iscite.pt

Louize Hill
IPIMAR
Avenida de Brasilia
1449-006 Lisbon
Tel: +351 2 130 27062
Fax: +351 2 130 15948
E-mail: lhill@ipimar.pt

Domingos de Silva Neto
Des Biologia Vegetal
Faculdade Cienlias Lisboa, Cz
Piso-4
Compo Grande
1749-016 Lisboa
Tel: +351 9 651 74175
Fax: +351 2 175 00048
E-mail: dom@fc.ul.pt

Graça Noronha
DGA
Rua de Murqueira-Zambujal
2720-865 Amadora
Tel: +351 2 147 28333
Fax: +351 2 147 28379
E-mail: g.noronha@dga.min-amb.pt

Graça Pestana (Delegate)
IPIMAR
Avenida de Brasilia
1449-006 Lisbon
Tel: +351 2 130 27109
Fax: +351 2 130 15948
E-mail: gpestana@ipimar.pt

William Silvert
IPIMAR
Avenida de Brasilia
1449-006 Lisbon
Tel: +351 9 193 55925
E-mail: wsilvert@ipimar.pt

RUSSIA

Andrey Dolgov
PINRO
6 Knipovich St.
183763 Murmansk
Tel: +7 81 524 72962
Fax: +7 81 524 73331
E-mail:
matlab@pinro.murmansk.ru

Yuri Efimov
VNIRO
V. Krasnoselskaya St.17a
107140 Moscow
Tel: +7 26 492 89
Fax: +7 26 490 21

Valeri Feldman
AtlantNIRO
5 D.Donskoy Str.
236000 Kaliningrad
Tel: +7 011 222 552 369
Fax: +7 011 221 9997
E-mail:
feldman@atlant.baltnet.ru

Elena Karasiova
AtlantNIRO
5 D.Donskoy Str.
236000 Kaliningrad
Tel: +7 011 222 5265
Fax: +7 011 221 9997
E-mail:
karasiova@atlant.baltnet.ru

Oleg Lapshin
Russian Federal Research
Vladimir Ozhigin
PINRO
6 Knipovich St.
183763 Murmansk
Tel: +7 81 524 72962
Fax: +7 81 524 73331
E-mail:
ozhigin@pinro.murmansk.ru

Yuri Piskarev
Russian Fisheries Representative
In Denmark
Embassy of the Russian
Federation
Kristianiagade 5
2100 Copenhagen Ø
Denmark

Valeri Shleinik (Delegate)
PINRO
6, Knipovich Street
183763 Murmansk
Tel: +7 81 524 72962
Fax: +7 81 524 73331
E-mail:
inter@pinro.murmansk.ru

SPAIN/ESPAGNE

Ricardo Arnaiz
Conselleria de Pesca
Xunta de Galicia
Edificio San Caetano No 5
19771 Santiago de Compostela
A Coruña
Tel: +34 981 544 081
Fax: +34 981 545 025
E-mail:
ricardo.arnaiz.ibarrondo@xunta.es

Gloria Blanco
Universidad de Oviedo
Dpt. Biología Funcional Area de
Genética
33071 Oviedo-Asturias
Tel: +34 985 103 889
Fax: +34 985 103 534
E-mail: gloriablanca@yahoo.com

Raul Castro
AZTI
Satrustegui 8
20008 San Sebastian
Tel: +34 943 316 731
Fax: +34 943 212 162
E-mail: rcastro@azti.es

Orestes Cendrero
Instituto Español de Oceanografía
Centro Oceanografico de
Santander
Apdo 240
39080 Santander
Tel: + 34 942 291 060
Fax: +34 942 275 072
E-mail:
orestes.cendrero@st.ieo.es

Enrique de Cardenas
Instituto Español de Oceanografía
Avda de Brasil 31
28020 Madrid
Tel: +34 915 974 443
Fax: +34 915 551 954
E-mail: e.decardenas@md.ieo.es

Pablo Duran
Instituto Español de Oceanografía
Apartado 1552
36280 Vigo
Tel: +34 986 492 111
Fax: +34 986 492 351
E-mail: pablo.duran@vi.ieo.es

Dr A. Celso Fariña
Instituto Español de Oceanografía
Muelle de Animas
15001 Coruña
Tel: +34 981 205 362
Fax: +34 981 229 077
E-mail: celso.farina@co.ieo.es

José Fumega
Instituto Español de Oceanografía
Apartado 1552
36280 Vigo
Tel: +34 986 492 111
Fax: +34 986 492 351
E-mail: jose.fumega@vi.ieo.es

Jesus Garcia Lafuente
University of Malaga
ETSI Telecommunication
Campus de Teatinos
29071 Malaga
Tel: +34 952 132 721
Fax: +34 952 131 450
E-mail: glafuente@ctima.uma.es

José Iglesias
Instituto Español de Oceanografía
Apartado 1552
36280 Vigo
Tel: +34 986 492 111
Fax: +34 986 492 351
E-mail: jose.iglesias@vi.ieo.es

Alicia Lavín
Instituto Español de Oceanografía
Promontorio San Martín
39080 Santander
Tel: +34 942 291 060
Fax: +34 942 275 072
E-mail: alicia.lavin@st.ieo.es

Eduardo López-Jamar (Delegate)
Instituto Español de Oceanografía
Avda de Brasil 31
28020 Madrid
Tel: +34 915 970 841
Fax: +34 915 973 770
E-mail:
eduardo.ljamar@md.ieo.es

José Molares
Conselleria de Pesca
Centro de Investigacions Marinas
36600 Vilanova de Aruosa
Tel: +34 986 500 155
Fax: +34 986 506 788
E-mail: jmol@cimacoron.org

Lorenzo Motos
AZTI
Avda Satrustegui 8
20008 San Sebastián
Tel: +34 943 214 124
Fax: +34 943 212 162
E-mail: lmotos@azti.es

Teresa Nunes
Instituto Español de Oceanografía
Apartado 1552
36280 Vigo
Tel: +34 986 492 111
Fax: +32 986 492 351
E-mail: teresa.nunes@vi.ieo.es

Ignacio Olaso
Instituto Español de Oceanografía
Promontorio San Martín
39004 Santander
Tel: +34 942 291 060
Fax: +34 942 275 072
E-mail: iolaso@st.ieo.es

Carmela Porteiro
Instituto Español de Oceanografía
Apartado 1552
36280 Vigo
Tel: +34 986 492 111
Fax: +34 986 492 351
E-mail:
carmela.porteiro@vi.ieo.es

Yolanda Sagarminaga
AZTI
Avda Satrustegui 8
20008 San Sebastián
Tel: +34 943 214 124
Fax: +34 943 212 162
E-mail: ysagarminaga@azti.es

José Sánchez
Universidad de Oviedo
Dpt. Biología Funcional Área
de Genética
33071 Oviedo-Astruías

Marina Santurtun
AZTI
Fisheries Resources
Txatxarramendi ugarte a z/g
48395 Sukarrieta

Andrés Uriarte
AZTI
Avda Satrustegui 8
20008 San Sebastián
Tel: +34 943 316 731
Fax: +34 943 212 162
E-mail: auriarte@azti.es

Luis Valdés
Instituto Español de Oceanografía
Promontorio San Martín
39004 Santander
Tel: +34 942 291 060
Fax: +34 942 275 072
E-mail: luis.valdes@st.ieo.es

SWEDEN/SUÈDE

Hans Ackefors
Stockholm University
Dept. of Zoology
10691 Stockholm
Tel: +46 81 640 20
Fax: +46 81 677 15
E-mail:
hans.ackefors@zoologi.su.se

Rolf Åkesson (Delegate)
Ministry for Agriculture and
Fisheries
10333 Stockholm
Tel: +46 84 051 122
Fax: +46 81 050 61
E-mail: rolf.akesson@agriculture.
ministry.se

Fredrik Arrhenius
Institute of Marine Research
P.O. Box 4,
45321 Lysekil
Tel: +46 52 318 746
Fax: +46 52 311 3977
E-mail:
fredrik.arrhenius@fiskeriverket.se

Lars Edler
SMHI
Doktorsg. 9D
SE 262 52 Ängelholm
Tel: +46 43 180 854
Fax: +46 43 183 167
E-mail: lars.edler@smhi.se

Lars Hernroth (Delegate)
Institute of Marine Research
P.O. Box 4,
45321 Lysekil
Tel: +46 52 318 700
E-mail:
lars.hernroth@fiskeriverket.se

P.O. Larsson
Institute of Marine Research
P.O. Box 4
45321 Lysekil
Tel: +46 52 318 707
Fax: +46 52 313 977
E-mail: per-olov.larsson
fiskeriverket.se

Anders Nissling
Gotland University College
Ar Research Station
Ar, Fleringe
62035 Farösund
Tel: +46 49 822 4630
Fax: +46 49 822 4567
E-mail: anders.nissling@hgo.se

Ingemar Olsson
WWF Sweden
Hanhals kyrväg 234
43033 Fjärås
Tel: +46 30 054 0464
Fax: +46 30 054 0464
E-mail: Vlq442a@tninet.se

Bengt Sjöstrand
Institute of Marine Research
P.O. Box 4
45321 Lysekil
Tel: +46 52 318 708
Fax: +46 52 313 977
E-mail:
bengt.sjostrand@fiskeriverket.se

Jan Szaron
Swedish Meteorological and
Hydrological Institute
Nya Varvet 31
42671 Västra Frölunda
Tel: +46 31 751 8971
Fax: +46 31 7518980
E-mail: Jan.Szaron@smhi.se

Mats Ulmestrand
Institute of Marine Research
P.O. Box 4
45321 Lysekil
Tel: +46 52 387 00
Fax: +46 52 313 977
E-mail:
mats.ulmestrand@fiskeriverket.se

Lies Van Nieuwerburgh
Uppsala University
Department of Ecology
Villavägen 14,
75236 Uppsala
Tel: +46 18 471 2798
Fax: +46 18 553 419
E-mail:
lies.van_nieuwerburgh@ebc.vv.se

Yvonne Walther
Natural Board of Fisheries
Baltic Sea Research Station
Utövägen 5
371 37 Karlkrona
Tel: +46 45 514 230
Fax: +46 45 510 484
E-mail:
yvonne.walther@fiskeriverket.se

UNITED KINGDOM/ROYAUME-UNI

Colin Bannister
MAFF CEFAS
Lowestoft Laboratory
Pakefield Road
NR33 0HT Lowestoft, Suffolk
Tel: +44 1502 524 235
Fax: +44 1502 524 511
E-mail:
r.c.a.bannister@cefas.co.uk

Doug Beare
Marine Laboratory Aberdeen
SOAFD Marine Laboratory
P.O. Box 101, Victoria Road
AB9 8DB Aberdeen
Tel: +44 1224 295 314
E-mail: d.beare@marlab.ac.uk

Richard Briggs
DARD Northern Ireland
Aquatic Systems Group (AESD)
Newforge Lane
Belfast B19 5PX
Northern Ireland
Tel: +44 2890 255 503
Fax: +44 2890 382 244
E-mail:
richard.briggs@dardni.gov.uk

Elizabeth Clarke
University of St. Andrews
Mathematical Institute
St. Andrews, KY16 9SS Fife
Tel: +44 1334 463 228
Fax: +44 1334 463 748
E-mail: liz@mcs.st-and.ac.uk

David Connor
Joint Nature Conservation
Committee
Monkstone House, City Road
PE1 1JY Peterborough
Tel: +44 1733 866 837
Fax: +44 1733 555 948
E-mail: connor_d@jncc.gov.uk

Barrie Deas
NFFO
Marsden Road, Fish Docks
DN31 3SG Grimsby
Tel: +44 1472 352 141
Fax: +44 1472 242 486
E-mail: nffo@nffo.org.uk

Paul Eastwood
Marine Fisheries GIS Unit
Department of Geography
University College
CT1 1QU Canterbury, Kent
Tel: +44 1227 782 34
Fax: +44 1227 767 531
E-mail: p.d.eastwood@cant.ac.uk

Clare Eno
Countryside Council for Wales
Fford Penrhos
LL57 2LQ Bangor, Gwynedd
Tel: +44 1248 385 674
Fax: +44 1248 365 510
E-mail: c.eno@ccw.gov.uk

Dick Ferro
FRS Marine Laboratory
P.O. Box 101, Victoria Road
AB11 9DB Aberdeen
Tel: +44 1224 295 480
Fax: +44 1224 295 511
E-mail: ferro@marlab.ac.uk

Chris Frid
University of Newcastle
Dove Marine Laboratory
North Shields
ME10 4P2 Newcastle
Tel: +44 1912 524 850
Fax: +44 1912 521 054
E-mail: c.h.j.frid@ncl.ac.uk

Robert Furness
University of Glasgow
Graham Kerr Building
G12 8QQ Glasgow
Tel: +44 141 330 3560
Fax: +44 141 330 5971
E-mail: r.furness@bio.gla.ac.uk

John Gordon
Scottish Association for Marine
Science
PO Box 3
PA34 4AD Oban
Tel: +44 1631 559 222
Fax: +44 1631 565 518
E-mail: jdmg@dml.ac.uk

Christina Grieve
Institute for European
Environmental Policy
Dean Bradley House, 52
Horseferry Road
SW1P 2AG London
Tel: +44 207 799 2244
Fax: +44 207 799 2600
E-mail:
cgrieve@ieeplondon.org.uk

Roger Harris
Plymouth Marine Laboratory
Prospect Place
PL1 3DH Plymouth
Tel: +44 1752 633400
Fax: +44 1752 633101
E-mail: r.harris@pml.ac.uk

Mike Heath
FRS Marine Laboratory
PO Box 101
AB11 9DB Aberdeen
Tel: +44 1224 876544
Fax: +44 1224 295511
E-mail: heathmr@marlab.ac.uk

John Hislop
Fisheries Research Services
Marine Laboratory
P.O. Box 101, Victoria Road
Aberdeen AB11 9DB
Tel: +44 1224 295412
Fax: +44 1224 295511
E-mail: hislopjrg@marlab.ac.uk

Joe Horwood (Delegate)
MAFF CEFAS
Lowestoft Laboratory
Pakefield Road
NR33 0HT Lowestoft, Suffolk
Tel: +44 1502 524248
Fax: +44 1502 573865
E-mail: j.w.horwood@cefas.co.uk

Andrew Kenny
ABP Research
Pathfinder House
SO14 3AE Southampton
Tel: +44 2380 338100
Fax: +44 2380 338040
E-mail: ajk@research.abport.co.uk

Mark Kirby
MAFF CEFAS
Burnham-on-Crouch Laboratory
Remembrance Avenue
Burnham-on-Crouch
CM0 8HA Essex
Tel: +44 1621 787287
Fax: +44 1621 784989
E-mail: m.f.kirby@cefas.co.uk

John Lindley
Sir Alister Hardy Foundation for
Ocean Science
Citadel Hill
PL1 2PB Plymouth
Tel: +44 1752 633133
Fax: +44 1752 633102

John Lock
Ministry of Agriculture, Fisheries
and Food
1A Page Street
London SW1P 4PQ
Tel: +44 2079 046339
Fax: +44 2079046715
E-mail:
j.lock@csg.maff.gsi.gov.uk

Peter Matthiessen
MAFF CEFAS
Remembrance Avenue
Burnham-on-Crouch CM0 8HA
Essex
Tel: +44 1621 787200
Fax: +44 1621 784989
E-mail: p.matthiessen@cefas.co.uk

Ronald McHugh
Heriot-Watt University
Dept. of Computing & Electrical
Engineering
EH14 4AS Edinburgh
Tel: +44 131 451 3355
Fax: +44 131 451 3327
E-mail: rmc@cee.hw.ac.uk

David Middleton
Fisheries Department
Falkland Islands Government
P.O. Box 598, Stanley
Falkland Islands
Tel: +500 27260
Fax: +500 27265
E-mail: fish.fig@horizon.co.fk

Ron Mitson
ACOUSTEC
Swiss Cottage
NR32 5DA Lowestoft
Tel: +44 1502 730274
E-mail: acoustec@csi.com

Dorian Moss
Centre for Ecology & Hydrology
Monks Wood
Abbots Ripton
PE28 2LS Huntingdon
Tel: +44 1487 772408
Fax: +44 1487 773467
Dor@ceh.ac.uk

Carl O'Brien
MAFF CEFAS
Lowestoft Laboratory
Pakefield Road
NR33 0HT Lowestoft
Tel: +44 1502 524 256
Fax: +44 1502 513 865
E-mail: c.m.obrien@cefas.co.uk

Andy Payne
MAFF CEFAS
Lowestoft Laboratory
Pakefield Road
NR33 0HT Lowestoft
Tel: +44 1502 524 344
Fax: +44 1502 573 865
E-mail: a.i.l.payne@cefas.co.uk

Philippe Percival
University of Newcastle
Dove Marine Laboratory
North Shields
NE10 4PZ Newcastle
Tel: +44 1912 524850
Fax: +44 1912521054
E-mail: philip.percival@ncl.ac.uk

John Ramster
3 Woodside Avenue
Bridge of Weir, PA11 3PQ
Tel: +44 1505 615 402
Fax: +44 1505 615 402
E-mail: jramster@lineone.net

Hubert Rees
MAFF CEFAS
Burnham-on-Crouch Laboratory
Burnham-on-Crouch
CM0 8HA Essex
Tel: +44 1621 787242
Fax: +44 1621 784989
E-mail: h.l.rees@cefas.co.uk

David Reid
Marine Laboratory Aberdeen
SOAFD Marine Laboratory
PO Box 101 Victoria Road
AB9 8DB Aberdeen
Tel: +44 1224 295314
Fax: +44 1224 295511
E-mail: reiddg@marlab.ac.uk

Andy Revill
University of Newcastle
Dove Marine Laboratory
North Shields
ME10 4P2 Newcastle
Tel: +44 1912 524 850
Fax: +44 1912 521 054
E-mail: A.S.Revill@ncl.ac.uk

Daniel Richardson
FRS Marine Laboratory
P.O. Box 101, Victoria Road
AB11 9DB Aberdeen

David Righton
MAFF CEFAS
Lowestoft Laboratory
Pakefield Road
NR33 0HT Lowestoft
Tel: +44 1502 524 359
Fax: +44 1502 573 865
E-mail: d.righton@cefas.co.uk

Leonie Robinson
University of Newcastle
Dove Marine Laboratory
North Shields
ME10 4P2 Newcastle
Tel: +44 1912 524 850
Fax: +44 1912 521 054
E-mail: l.a.robinson@ncl.ac.uk

Jonathan Side
ICIT, Heriot Watt University
Old Academy, Back Road
KW16 3AW Orkney
Tel: +44 1856 850 605
Fax: +44 1856 851 349
E-mail: J.C.Side@hw.ac.uk

John Simmonds
FRS Marine Laboratory
PO Box 101, Victoria Road
AB11 9DB Aberdeen
Tel: +44 1224 295 366
Fax: +44 1224 295 511
E-mail: simmondsej@marlab.ac.uk

Mark Tasker
Joint Nature Conservation
Committee
Dunnet House, 7 Thistle Place
AB10 1UZ Aberdeen
Tel: +44 1224 655701
Fax: +44 1224 621488
E-mail: mark.tasker@jncc.gov.uk

John Thain
MAFF CEFAS
Burnham-on-Crouch Laboratory
Burnham-on-Crouch
CM0 8HA Essex
Tel: +44 1621 787 239
Fax: +44 1621 784 989
E-mail: j.e.thain@cefas.co.uk

Kevin Thomas
MAFF CEFAS
Burnham-on-Crouch Laboratory
Burnham-on-Crouch
CM0 8HA Essex
Tel: +44 1621 787208
Fax: +44 1621 784989
E-mail: k.v.thomas@cefas.co.uk

Bill Turrell (Delegate)
Marine Laboratory Aberdeen
P.O. Box 101, Victoria Road
AB 11 9DB Aberdeen
Tel: +44 1224 876 544
Fax: +44 1224 295 511
E-mail: turrellb@marlab.ac.uk

Peter Withames
MAFF CEFAS
Lowestoft Laboratory
Pakefield Road
NR33 0HT Lowestoft
Tel: +44 1502 524 403
Fax: +44 1502 573 865
E-mail: p.r.withames@cefas.co.uk

Alan Youngson
Freshwater Fisheries Laboratory
Faskally Pitlochry
PH16 5LB Perthshire
Tel: +44 1796 472 060
Fax: +44 1796 473 523
E-mail: youngsonaf@marlab.ac.uk

USA/ETATS-UNIS

Frank Almeida
DOC/NOAA/NMFS/NEFSC
166 Water Street
Woods Hole, MA 02543
Tel: +1 508 495 2303
Fax: +1 508 495 2393
E-mail: Frank.Almeida@noaa.gov

Kerim Aydin
School of Aquatic Fisheries
Science
P.O. Box 355020, Seattle 98195
Tel: +1 206 526 4225
Fax: +1 206 526 6723
E-mail:
kerim@fish.washington.edu

James Bisagni
University of Massachusetts
School of Marine Science
706 South Rodney French Blvd.
New Bedford, MA 02744-1221
Tel: +1 508 910 6328
Fax: +1 508 999 8197
E-mail: jbisagni@umassd.edu

Cleo Brylinsky
Alaska Dept. of Fish and Game
304 Lake St, Room 103
Sitka, Alaska 99835
Tel: +1 907 747 6688
Fax: +1 907 747 6693
E-mail:
cleo_brylinsky@fishgame.state.ak.us

Larry Buckley
URI/NOAA CMER Program
Graduate School of Oceanography
Narragansett, RI 02882
Tel: +1 401 874 6671
Fax: +1 401 874 6240
E-mail: lbuckley@gso.uri.edu

Ann Bucklin
University of New Hampshire
OPAL/EOS
142 Morse Hall
Durham, NH 03824
Tel: +1 603 862 0122
Fax: +1 603 862 0243
E-mail: acb@ciunix.unh.edu

Anthony Calabrese
National Marine Fisheries Service
Milford Laboratory
212 Rogers Avenue
Milford, CT 06460
Tel: +1 203 579 7040
Fax: +1 203 579 7017
E-mail:
anthony.calabrese@noaa.gov

Allegra Cangelosi
Northeast-Midwest Institute
218 D St. SE
Washington DC 20003
Tel: +1 202 464 4007
Fax: +1 202 544 0043
E-mail: acangelo@nemw.org

James Carlton
Willams College
Mystic Seaport
Mystic, CO 06355
Tel: +1 860 572 5359
Fax: +1 860 572 5329
E-mail: jcarlton@willams.edu

Arnold Carr
Massachusetts Division of Marine
Fisheries
50A Portside Drive
Pocasset, MA 02559
Tel: +1 508 563 1779
Fax: +1 508 563 5482
E-mail: arne.carr@state.ma.us

William Cocke
US Department of State
OES/OA
Washington DC 20520
Tel: +1 202 647 4935
Fax: +1 202 647 1106
E-mail: cockewt@state.gov

Robert K. Cowen
RSMAS
University of Miami
4600 Rickenbacker Causeway
Miami, FL 33149
Tel: +1 305 361 4023
E-mail: rcowen@rsmas.miami.edu

Daniel Erickson
Wildlife Conservation Society
37805 Summer Creek Rd
Dexter, OR 97431
Tel: +1 541 747 9266
Fax: +1 541 747 9266
E-mail: dle@efn.org

Gary Greene
Moss Landing Marine
Laboratories
8272 Moss Landing Road
Moss Landing, CA 95065
Tel: +1 831 632 4438
Fax: +1 831 632 4403
E-mail: greene@mlml.calstate.edu

Sarah Hinckley
Alaska Fisheries Science Center
7600 Sand Point Way NE
Seattle, WA 98115
Tel: +1 206 526 4109
Fax: +1 206 526 6723
E-mail: sarah.hinckley@noaa.gov

Dale Vance Holliday
BAE Systems
4669 Murphy Canyon Road
San Diego, CA 92123-4333
Tel: +1 858 268 9777
Fax: +1 858 268 9775
E-mail: van.holliday@
baesystems.com

Edward Houde
University of Maryland
Chesapeake Biological Lab.
Solomons, MD 20688
Tel: +1 410 326 7224
Fax: +1 410 326 7318
E-mail: ehoud@cbl.umces.edu

Sukgeun Jung
Chesapeake Biological Laboratory
1 Williams Street, P.O. Box 38
Solomons, MD 20688
Tel: +1 410 326 7216
Fax: +1 410 326 7318
E-mail: jung@cbl.umces.edu

William Karp
US National Marine Fisheries
Service
7600 Sand Point Way N.E.
Seattle, Washington 98115
Tel: +1 206 526 4164
Fax: +1 206 526 6723
E-mail: Bill.Karp@noaa.gov

Ivor Knight
James Madison University
Dept. of Biology
MSC 78D1, JMU
Harrisonburg, VA 22807
Tel: +1 540 568 6865
Fax: +1 540 568 3333
E-mail: knightit@jmu.edu

Patricia Kremer
University of Connecticut
Dept. of Marine Sciences
Avery Point
Groton, CT 06340
Tel: +1 860 405 9140
Fax: +1 860 405 9153
E-mail: pKremer@uconn.edu

Patricia Kurkul
U.S. Dept. of Commerce, NOAA,
Fisheries Service
One Blackburn Drive
Gloucester, MA 01930
Tel: +1 978 281 9210
Fax: +1 978 281 9371
E-mail: pat.kurkul@noaa.gov

Gregory Lough
Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543
Tel: +1 508 495 2222
Fax: +1 508 495 2258
E-mail:
glough@whsun1.wh.who.edu

Livingston Marshall
Morgan State University
1700 East Cold Spring Lane
Baltimore, MD 21251
Tel: +1 443 885 4468
Fax: +1 410 426 4732
E-mail:
Lmarshall@moac.morgan.edu

Richard Methot
NOAA/NMFS
2725 Montlake Blvd E
Seattle, WA 98112
Tel: +1 206 860 3365
Fax: +1 206 860 3394
E-mail: richard.methot@noaa.gov

Henry Milliken
NMFS/NEFSC
166 Water Street
Woods Hole, MA 02543
Tel: +1 508 495 2294
Fax: +1 508 495 2258
E-mail: Henry.Milliken@noaa.gov

David Mountain
NOAA/NMFS
166 Water Street,
Woods Hole, MA 02543
Tel: +1 508 495 2271
Fax: +1 508 495 2258
E-mail: david.mountain@noaa.gov

Steven Murawski
DOC/NOAA/NMFS/NEFSC
166 Water Street
Woods Hole, MA 02543
E-mail:
smurawski@whsun1.wh.who.edu

Kate Murphy
Smithsonian Environmental
Research Center
647 Contees Wharf Road
Edgewater, 21037
Tel: +1 410 798 4424
Fax: +1 301 261 7954

Elizabeth North
University of Maryland
Center for Environment Science
1 Williams Street
Solomons, MD 20688
Tel: +1 410 326 7274
Fax: +1 410 326 7318
E-mail: north@cbl.umces.edu

Thomas Osborn
Johns Hopkins University
Center for Environmental and
Applied Fluid Mechanics
3400 N Charles Street
Baltimore, MD 21218-2681
Tel: +1 410 516 7519
Fax: +1 410 516 7933
E-mail: osborn@jhu.edu

Paul Rago
DOC/NOAA/NMFS/NEFSC
166 Water Street
Woods Hole, MA 02543
Tel: +1 508 495 2341
Fax: +1 508 495 2393
E-mail:
prago@whsun1.wh.who.edu

Michael Reeve (Delegate)
National Science Foundation
Ocean Sciences Division
4201 Wilson Boulevard
Arlington, VA 22230
E-mail: mreeve@nsf.gov

Thomas Rossby
Graduate School of Oceanography
University of Rhode Island
Kingston, RI 02881
Tel: +1 401 874 6521
Fax: +1 401 874 6728
E-mail: trossby@gso.uni.edu

Brian Rothschild
University of Massachusetts
Centre for Marine Science and
Technology
706 South Rodney French Blvd.
New Bedford, MA 02744-1221
Tel: +1 508 99 8193
Fax: +1 508 99 8197
E-mail: Brothschild@Umassd.edu

Kenneth Sherman
USDOC/NOAA
28 Tarzwell Drive
Narragansett,
Rhode Island 02882-1199
Tel: +1 401 782 3211
Fax: +1 401 782 3201
E-mail:
Kenneth.Sherman@noaa.gov

Michael Sissenwine (Delegate)
Northeast Fisheries Science
Center, NMFS/NOAA
166 Water Street
Woods Hole, MA 02543
Tel: +1 508 495 2233
Fax: +1 508 495 2232
E-mail:
Michael.Sissenwine@noaa.gov

David Somerton
National Marine Fisheries Service
7600 Sand Point Way NE
Seattle, WA 98115
Tel: +1 206 526 4116
Fax: +1 206 526 6723
E-mail: david.somerton@noaa.gov

John Steele
Woods Hole Ocean Institute
Woods Hole, MA 02543
Tel: +1 508 289 2220
Fax: +1 508 457 2184
E-mail: jsteele@who.edu

Ken Weinberg
National Marine Fisheries Service
Building 4
7600 Sand Point Way
Seattle, WA 98115-0070
Tel: +1 206 526 6109
Fax: +1 206 526 6723
E-mail: Ken.Weinberg@noaa.gov

Francisco Werner
Marine Sciences Department
University of North Carolina
Chapel Hill, NC 27599-3300
Tel: +1 919 962 0265
Fax: +1 919 962 1254
E-mail: cisco-werner@unc.edu

Charles West
National Marine Fisheries Service
FRAMD, NWFSC
2725 Mintlake Blvd.E
Seattle, WA 98112
Tel: +1 206 860 5619
Fax: +1 206 860 3394
E-mail: bill.west@noaa.gov

Peter Wiebe
Woods Hole Ocean Institute
Woods Hole, MA 02543
Tel: +1 508 289 2313
Fax: +1 508 457 2169
E-mail: pwiebe@who.edu

ICES SCIENTIFIC OBSERVERS/OBSERVATEURS SCIENTIFIQUES

AUSTRALIA/AUSTRALIE

Alan Butler
CSIRO Marine Research
6 P.O. Box 1538, Hobart
Tasmania 7001
Tel: +61 362325491
Fax: +61 362325053
E-mail:
alan.butler@marine.csiro.au

Oliver Floerl
James Cook University
Tropical Environment Studies
Dept.
Townsville, 4811 Queensland
Tel: +61 747816941
Fax: +61 747814020
E-mail: oliver.floerl@jcu.edu.au

Chad Hewitt
CSIRO Marine Research
CRIMP
GPO Box 1538
7001 Hobart, Tasmania
Tel: +61 362325102
Fax: +61 362325485
E-mail:
chad.hewitt@marine.csiro.au

David Johnson
Australian Fisheries Management
Authority
Box 7051, Canberra Mail Centre
2610 Australian Capital Territory
E-mail:
David.Johnson@afma.gov.au

Ian Poiner
CSIRO Marine Research
PO Box 120
Cleveland, 4163 Queensland
Tel: +61 738267223
Fax: +61 738267281
E-mail:
ian.poiner@marine.csiro.au

CHILE/CHILI

Ricardo Norambuna
Institute for Fishing Development
Bellavista 168, Floor 17th
100-V Valparaiso
Tel: +56 32 212187
Fax: +56 32 251693
E-mail: rnorambu@subpesca.cl

Alesandro Zuleta
Institute for Fishing Development
Bellavista 168. Floor 15th
100-V Valparaiso
Tel: +56 32 212630
Fax: +56 32 251693
E-mail: azuleta@eutechile.net

GREECE/GRECE

Anna Chilari
National Center for Marine
Research
Agios Kosmas
16604 Athens
Tel: +30 1982135
Fax: +30 19811713
E-mail: annachil@ncmr.gr

George Petrakis
National Centre for Marine
Research
Agios Kosmas Hellinikon
16604 Athens
Tel: +301 9821354
Fax: +301 9811713
E-mail: gpetr@ncmr.gr

Anna Terrats
National Center for Marine
Research
Agios Kosmas
16604 Athens
Tel: +301 9821354
Fax: +301 9811713
E-mail: annate@ncmr.gr

Dr Anastasios Eleftheriou
Institute of Marine Biology
of Crete
P.O. Box 2214
71003 Heraklion, Crete
Tel: +30 81346860
Fax: +30 81241882
E-mail: imbc@imbc.gr

SOUTH AFRICA/AFRIQUE DU SUD

Janet Coetzee
Marine & Coastal Management
P Bag X2, Rogge Bay
8012 Cape Town
Tel: +27 214023176
Fax: +27 214217408
E-mail: jcoetzee@sfri.wcape.gov.za

NON-MEMBER COUNTRIES/PAYS NON-MEMBRES

ARGENTINA/ARGENTINE

Marcelo Pérez
INIDEP
Paseo Victoria Ocampo No 1
7600 Mar del Plata, Buenos Aires
Tel: + 54 2234862586
Fax: +54 2234861830
E-mail: mperez@inidep.edu.ar

ISRAEL/ISRAËL

Sigal Shefer
Tel-Aviv University
Insitute for Nature Conservation Research
Ramar Aviv
69978 Tel-Aviv
Tel: +972 3640 6936
Fax: +972 3640 7304
E-mail: shef@post.tau.ac.il

ITALY/ITALIE

Germana Garofalo
IRMA-CNR
Bia L. Vaccara 61
91026 Mazara Del Vallo
Tel: +39 923 948 966
Fax: +39 923 306 634
E-mail: garofalo@irma.pa.cnr.it

Michele Gristima
IRMA-CNR
Bia L. Vaccara 61
91026 Mazara Del Vallo
Tel: +39 923 948 966
Fax: +39 923 306 634

Giulio Relini
University of Genoa
Lab. Biol. Mar. Ecol. Anim.
Via Balbi 5
16126 Genoa
Tel: +39 010 247 7537
Fax: +39 010 247 7537
E-mail: biolmar@unige.it

JAPAN/JAPON

Sanae Chiba
Frontier Research System for
Global Change
Sumitomo-Hamamatuchu bldg. 4F
105-0013 Tokyo
Tel: +81 354 047 848
Fax: +81 354 054 150
E-mail: chibas@frontier.esto.or.jp

Kosei Komatsu
National Research Institute of
Fisheries Science
2-12-4 Fukuura, Kanazawa-ku
236-8648 Yokohama-shi,
Kanagawa-ken
Tel: +81 457 887 648
Fax: +81 457 885 001
E-mail: kosei@nrifs.affrc.go.jp

Kazuaki Tadokoro
Frontier Research System for
Global Change
Sumitomo-Hamamatuchu bldg. 4F
105-0013 Tokyo
Tel: +81 354 404 7848
Fax: +81 354 044 150
E-mail: denden@frontier.esto.or.jp

Ryo Kimura
National Research Institute of
Fisheries Science
2-12-4 Fukuura, Kanazawa-ku
236-8648 Yokohama-shi,
Kanagawa-ken
Tel: +81 457 887 636
Fax: +81 457 885 001
E-mail: rkim@nrifs.affrc.go.jp

Hiroshi Kubota
National Research Institute of
Fisheries Science
2-12-4 Fukuura, Kanazawa-ku
236-8648 Yokohama
Tel: +81 457 887 636
Fax: +81 457 887 615
E-mail: miles@nrifs.affrc.go.jp

Tamura Tsutomu
The Institute of Cetacean Research
4-18 Toyomi-cho, chuo-ku
104-0055 Tokyo
Tel: +81 335 366 521
Fax: +81 335 366 522
E-mail: tamura@i-cetacean-r.or.jp

NAMIBIA

Carola Kirchner
Ministry of Fisheries and Marine Resource
P.O. Box 912
9000 Swakopmund
Tel: +264 644 05744
Fax: +264 644 04385
E-mail: ckirchner@mfmr.gov.na

OBSERVERS FROM INTERGOVERNMENTAL ORGANISATIONS COOPERATING WITH ICES/OBSERVATEURS DES ORGANISATIONS INTERGOUVERNMENTALES COOPERANT AVEC LE CIEM

European Aquaculture Society

Alistair Lane
European Aquaculture Society
Slijkensesteenweg 4
8400 Oostende
Belgium

European Commission (EC)

Dr Klaus-Günther Barthel
European Commission
DG-Research/D.1.3 Some 7/83
Rue de la Loi 200
1049 Brussels
Tel: +32 22 951242
Fax: +32 22 96302
E-mail: klaus-guenther.
barthel@cec.eu.int

Willem Brugge
European Commission
DG-Fisheries
Rue de la Loi 200
1049 Brussels
Tel: +32 22 955137
Fax: +32 22 957861
E-mail:
willem.brugge@cec.eu.int

Ingvar Huse
DG-Fisheries
Rue de la Loi 200
1049 Brussels
Tel: +32 22 996761
Fax: +32 22 957862
E-mail: invar.huse@cec.eu.int

Kenneth Patterson
DG-Fisheries
Rue de la Loi 200
1049 Brussels
Tel: +32 22 992179
Fax: +32 22 955621
E-mail:
kenneth.patterson@cec.eu.int

Ole Tougaard
DG-Fisheries
Rue de la Loi 200
1049 Brussels
Tel: +32 22 952209

International Association of Biological Oceanography (IABO)

Alasdair McIntyre
IABO
65, Hamilton Place
Aberdeen AB15 5BW
United Kingdom
Tel: +44 1224 645633
Fax: +44 1224 620656
E-mail: a.d.mcintyre@abdn.ac.uk

International Baltic Sea Fishery Commission (IBSFC)

Walter Ranke
IBSFC
20, Hoza Street
00-528 Warsaw
Poland
Tel: +48 22 628 8647
Fax: +48 22 625 3372
E-mail: ibsfc@polbox.pl

North Atlantic Salmon Conservation Organization (NASCO)

Malcolm Windsor
NASCO
11, Rutland Square
Edinburgh EH1 2AS
United Kingdom
Tel: +44 1312 282 551
Fax: +44 1312 284 384
E-mail: secretary@nasco.int

North Pacific Marine Science Organisation (PICES)

Skip McKinnell
North Pacific Marine Science
Organisation
Institute of Ocean Sciences
P.O. Box 6000
9860 W. Saanich Road
Sidney, BC V8L 4B2
Canada
Tel. + 1 250 363 6826
Fax: +1 250 363 6827
E-mail: mckinnell@ios.bc.ca

World Wide Fund for Nature (WWF)

Sarah Jones
World Wide Fund for Nature
Marine Unit
Weyside Park, Catteshall
GU2 1XR Godalming
Tel: +44 1483 426 444
Fax: +44 1483 4264009
E-mail: sjones@wwfnot.org

EXHIBITORS/EXHIBITEURS

David Solomon
Foundry Farm
Kiln Lane
Redlynch, Salisbury
Wilshire SP5 2HT
United Kingdom
Tel: +44 1725 512 523
E-mail:
nmt@solomon.softnet.co.uk

Yvonne Solomon
Foundry Farm
Kiln Lane
Redlynch, Salisbury
Wilshire SP5 2HT
United Kingdom
Tel: +44 1725 512 523
E-mail:
nmt@solomon.softnet.co.uk

Hetty Verhagen
Elsevier Science BV
Molenwerf 1
1014 AG Amsterdam
Netherlands
Tel: + 31 204 853 338
Fax: +31 204 853 325
E-mail: h.verhagen@elsevier.nl

OFFICIALS OF THE COUNCIL

Scott Parsons, President of ICES
Dept. of Fisheries and Oceans
International Marine Science
Suite 640,
220 Laurier Avenue West
Ottawa, ONT K1A 0E6, Canada
E-mail: parsonss@dfo-mpo.gc.ca

**Robin Cook, Chair of
Consultative Committee**
FRS Marine Laboratory
P.O. Box 101, Victoria Road
Aberdeen, AB11 9DB, UK
E-mail: cookrm@marlab.ac.uk

**Stig Carlberg, Vice Chair
Consultative Committee**
SMHI
Nya Varvet 31
42671 Västra Frölunda
Tel: +46 31 751 8976
Fax: +46 31 751 8980
E-mail: stig.carlberg@smhi.se

**Tore Jakobsen, Chair of
Advisory Committee on Fishery
Management (ACFM)**
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 Bergen, Norway
Tel: + 47 55 168 636
Fax: +47 55 168 687
E-mail: torej@imr.no

**Hein Rune Skjoldal, Chair of
Advisory Committee on the
Marine Environment (ACME)**
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 Bergen, Norway
E-mail: hein.rune.skjoldal@imr.no

Niels Daan, Editor-in-Chief
RIVO-DLO
P.O. Box 68
1970 AB IJmuiden, Netherlands
Tel: +31 255 564 646
Fax: +31 255 654 644
E-mail: niels@rivo.dlo.nl

John Ramster, Editor
3 Woodside Avenue
Bridge of Weir, PA11 3PQ, UK
Tel: +44 1505 615 402
Fax: +44 1505 615 402
E-mail: jramster@lineone.net

John Hislop, Editor
Fisheries Research Services
Marine Laboratory
P.O. Box 101, Victoria Road
AB11 9DB Aberdeen
E-mail: hislopjrg@marlab.ac.uk

Michael Chadwick, Editor
Department of Fisheries and
Oceans
Gulf Fisheries Center
P.O. Box 5030
Moncton, NB E1C 9B6
E-mail: chadwickm@dfo-
mpo.gc.ca

ICES SECRETARIAT STAFF

David Griffith, General Secretary
Janet Pawlak, Environment
Adviser
Hans Lassen, Fisheries Adviser
Harry Dooley, Oceanographer
Keith Brander, ICES/GLOBEC
Coordinator

Jytte Andersen-Rosendal
Ingolf Bache
Mette Bertelsen
Bodil Chemnitz
Melodie Karlson
Görel Kjeldsen
Diane Lindemann

Inger Lützhøft
Margaret Moody
Gill Post
Judith Rosenmeier
Henrik Sparholt

PART II

88TH STATUTORY MEETING

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**AGENDA FOR COUNCIL: 2000 ICES ANNUAL SCIENCE CONFERENCE
(88TH STATUTORY MEETING)**

DELEGATES MEETING

1. Progress Report on Administration
2. Elections and Appointments at 88th Statutory Meeting
3. Elections of President, First Vice-President and Three Vice-Presidents
4. Appointment of Chair and two Members of Finance Committee
5. Appointment of Chair and Members of Publications Committee
6. Report of the Bureau Working Group on the Advisory Process
7. Changes in Rules of Procedure 26, 28, and 29
8. Appointments of Chairs of Management Committee for the Advisory Process (MCAP) and Advisory Committee on Ecosystems (ACE)
9. Proposal to Change the Financial and Operational ICES Year
10. Report on Accession Process of Lithuania to ICES Convention
11. Application by Chile for Observer Status
12. Arrangements for future Annual Science Conferences and Statutory Meetings: 2001(Norway), 2002 (Denmark; ICES Centenary), 2003 (Estonia), 2004 (Spain)
13. Developing Memoranda of Understanding
14. Report on 2000 Meeting of ICES/Commissions Working Group on Cooperative Procedures
15. Report on Planning and Funding for the ICES Centenary
16. Report on the History Book Project
17. Strategic Plan – next steps
18. Report of Coordinating Group on ICES Advice
19. Status of ICES/GLOBEC Project Office
20. Progress Report on GEF Baltic Sea Regional Project
21. Report of Finance Committee
 - 21.1 Audited Accounts for Financial Year 1998/1999
 - 21.2 Estimated Accounts for Financial Year 1999/2000
 - 21.3 Budget for Financial Year 2001
 - 21.4 Forecast Budget for Financial Year 2002
 - 21.5 Appointment of Auditors for 2001
22. Reports and Recommendations of Consultative Committee
23. ACFM and ACME Matters
24. Report of the Follow-Up Dialogue Meeting (London, 8 February 2000)
25. Preliminary Report of the 12th (Environmental) Dialogue Meeting (Bonn, 7–8 September 2000)
26. Plans for improved accommodation at ICES Headquarters
27. Report of the Publications Committee
28. Any other Business

Reports of Science Committees

REPORT OF CONSULTATIVE COMMITTEE

Chair: R.M. Cook

1 OPENING

The Committee met during the following five sessions:

Monday 25 September	08.30 – 09.30
Tuesday 26 September	08.30 – 09.50
Thursday 28 September	12.30 – 13.30
Monday 2 October	08.30 – 17.30
Tuesday 3 October	08.30 – 11.47

Most members of the Committee, as well as the Oceanographer and the Environment and Fisheries Advisers, were present at each scheduled session. The Vice-Chair and the Chair of the Marine Habitat Committee did not attend the last two sessions. The Administrative Secretary attended the first session and the General Secretary attended the third session.

2 ADOPTION OF AGENDA AND TIMETABLE

The meeting agreed to the Agenda and Timetable as drafted.

3 GENERAL ARRANGEMENTS FOR ANNUAL SCIENCE CONFERENCE (INCLUDING ARRANGEMENTS FOR SELECTION OF AWARDS, POSTER SESSION, INSTRUCTIONS TO CONVENERS)

The Committee noted the Meeting arrangements as indicated in the 2000 Handbook and the layout of the venue. The Chair drew attention to the Conference Programme which outlines the Theme Sessions, Business Sessions and rooms. There would be “a cash bar” for the Poster Session.

It was agreed that, as last year, an *ad hoc* group would be assembled to cover the various Theme Sessions in order to select papers for the awards. Each Science Committee would nominate a member to act on the *ad hoc* group under the leadership of John Ramster, an editor of the *ICES Journal*.

4 GENERAL ARRANGEMENTS FOR STATUTORY MEETING (INCLUDING DRAFT RESOLUTIONS, REQUESTS TO SCIENCE COMMITTEES, AND PREPARATION OF COMMITTEE REPORTS)

The Chair drew attention to the Science Committee Work Plans which were initiated as part of the implementation of the Strategic Plan at the Mid-Term Meeting, and

developed intersessionally. It was not clear if and when these Work Plans would obtain formal approval. However, the Chair requested Committees to commence consideration of the development of their activities based on their Work Plan.

The Chair also drew attention to the concern of Delegates about the lack of a forum for salmon interests during the Statutory Meeting. He asked Committees to consider how the interests of this and other topic groups may be dealt with at future Statutory Meetings.

4.1 Review of the Statutory Meeting and Annual Science Conference

The Committee agreed that this Conference had been very successful. Many reports had been received which had expressed satisfaction. However, expressions of discontent had been received from several participants because of a conflict between Theme Session X and the Mini-Symposium. The Committee regretted this overlap which had arisen because of very late submissions to the Theme Session and because of timetable changes necessitated by the Open Forum.

Concern was expressed about the rather small number of Science Committee members attending. This was particularly the case for the Monday sessions which was partly due to the gap in the programme arising as a result of the Open Forum. However, some members considered that the announcements concerning the dates of the Committee meeting were not sufficiently clear and requested the Secretariat to ensure that this is more clearly announced next year. The Committee hopes that eventually there will be a complete separation of the Statutory Meeting from the Annual Science Conference in both location and date.

The Committee requested the Secretariat to improve the layout of the timetable in the Handbook by placing all four parallel sessions on one page for each day.

The Committee noted the following points from the Committee reports:

- The Fisheries Technology Committee will finalise its Work Plan next year. It is now in the process of restructuring its Working Groups.
- The Oceanography Committee was concerned about the way its 1999 Draft Resolution concerning the GLOBEC Office was handled. It also noted that the Committee activities were clearly linked to Objective 4 of the Strategic Plan and added that this linkage be included in the Work Plan. The Committee was very active in formally reviewing all of its Working Group

reports along the lines of the template recommended by the Consultative Committee.

- The Resource Management Committee has set up a sub group to further develop the Committee's Work Plan. The Committee considered that there was no need for topic groups, but that it should be more proactive in proposing activities spanning the whole spectrum of the Committee's remit. It also expressed a desire for a more coordinated session on dealing with survey reports (see any other business). The Committee Chair also noted a problem that had emerged since the election concerning potential conflicts of interest with regard to the newly elected Chair of the Committee, and considered that ICES may need a policy to address this problem in general.
- The Marine Habitat Committee indicated that it intended to introduce a more formal system for report reviews. The Committee was very pleased with the outcome of the Theme Sessions it had sponsored.
- The Mariculture Committee was concerned about the very low number of members that were present.
- The Living Resources Committee is concerned that specialists homes are still not provided for. It will continue work on developing its Work Plan having now agreed on categories of activities.
- The Baltic Committee noted the progress being made in the Baltic GEF project. The Committee is promoting interaction with the IOC/SCOR GEOHAB programme.

The Committee concluded by agreeing that all Science Committees institute the reviewing system for Working Group/Study Group and Workshop reports as already instigated by the Oceanography Committee.

5 ELECTIONS OF NEW COMMITTEE CHAIRS

5.1 Oceanography, Resource Management, Marine Habitat and Living Resources Committees

Elections for new Chairs of the Oceanography, Resource Management, Marine Habitat and Living Resources Committees took place at the Science Committee sessions on Friday 29 September. The result of these elections were:

- Oceanography – F. Colijn (Germany) replacing H. Loeng (Norway)

- Resource Management – J.J. Maguire (Canada)¹ replacing R. Stephenson (Canada)
- Marine Habitat Committee – P. Keizer (Canada) replacing A. Jarre (Denmark)
- Living Resources Committee – H. Heessen (Netherlands) replacing C.B. Bannister (UK).

5.2 Chair and Vice-Chair of Consultative Committee

On Thursday, 28 September R. Stephenson (Canada)² was elected to succeed R. Cook as Chair of the Committee. The election of Vice-Chair will take place in June 2001 under the existing Rules of Procedure. The Committee hopes that a clarification in the Rules of Procedure is undertaken as soon as possible as problems concerning the election of Vice Chair have remained unresolved for some time.

6 ECOSYSTEM ADVICE

This agenda item was chaired by S. Carlberg (Vice-Chair)

S. Carlberg recalled the conclusions of the Mid-Term Meeting which noted in particular that there is a great deal of new thinking on ecosystem advice emerging from both Science and Advisory Committee activities. Because of this the Consultative Committee decided to continue to play an active role in developing an understanding of this issue in ICES. In particular, the Committee considers that it has an essential role to co-ordinate issues which span several Science Committees. In this context the Committee noted that its Chair was also a member of MCAP.

The Committee agreed that, in order to initiate the work of the new advisory process in terms of the provision of ecosystem advice, it should produce a summary of recent and ongoing work, on a Committee-by-Committee basis, of direct relevance to the development of our understanding of ecosystem advice. This summary, which is attached as Annex 1, is not a scientific description of this work, but it should provide sufficient information for MCAP, and other users, to locate relevant material. The Annex lists and summarises recent documents and information with respect to ecosystem advice. The Committee expects that it would have an ongoing responsibility for overseeing ecosystem advice ideas emerging from the Science Committees and facilitating the link with the Advisory Process.

¹ JJ Maguire later withdrew. C. O'Brien (UK) was installed as interim Chair.

² R. Stephenson later withdrew. A Maucorps (France) was installed as interim Chair.

7 STATUS OF SCIENCE COMMITTEE WORK PLAN AND REQUIRED FOLLOW-UP WORK

The Committee agreed that the Science Committee Work Plans it had developed intersessionally would form the necessary basis for re-shaping the work of the Science Committees, in particular the review of the Working Group structure. The Committee would review further progress on this issue at its Mid-Term Meeting.

8 DEVELOPMENT OF PROGRAMME FOR THE 89TH STATUTORY MEETING/2001 ANNUAL SCIENCE CONFERENCE (OSLO, NORWAY)

The Committee proposed the programme as listed in Table 1. The inclusion of the two invited talks is likely to be dependent on funding being available to cover the speakers expenses. The Committee re-iterated its view that the conference fee be used to pay travel and per diem expenses of invited speakers.

8.1 CD-ROM production of ASC and Statutory Meeting papers

The Committee encourages the inclusion of a CD-ROM as part of the Conference package at the 2001 meeting. Small numbers of papers should continue to be available meantime. The Secretariat should greatly reduce the number of copies of Working Group papers as these are now available electronically via the ICES website.

9 DEVELOPMENT OF PROGRAMME FOR THE 90TH STATUTORY MEETING/2002 ANNUAL SCIENCE CONFERENCE (COPENHAGEN, DENMARK)

The Committee noted that no decision has been made yet with regard to an Open Lecture. The Committee would welcome the possibility to make proposals for this but appreciates that there may be other considerations for the 2002 Centenary Meeting.

The Committee considered the proposal received via the General Secretary which had resulted from discussions with Professors Hempel and Wooster at the recent ICES Symposium in Helsinki. The Committee appreciated the suggestions but noted that the proposals were not consistent with the forward-looking theme for the 2002 ASC. However, the Committee has noted the specific themes proposed and will consider them at a later date, as a topic for an Open Lecture, for example.

The Committee considered that the Theme Sessions, so far proposed for the 2002 Conference (Table 2), are appropriate but it made no firm decision at this stage. The Committee will reconsider this list, and other suggestions at its 2001 Mid-Term Meeting.

10 STATUS OF ICES SYMPOSIA

10.1 Symposia in 1999/2000

The Committee noted the reports of three Symposia that had been held since the last Statutory Meeting. (Doc. Gen:4). These were:

- The Symposium on Environmental Effects of Mariculture.
- Seventh International Conference on Artificial Reefs and Related Aquatic Habitats (ICES co-sponsor).
- 100 Years of Science under ICES.

10.2 Symposia for 2001 onwards

The following Symposia are already approved for the years 2000–2002:

- SAP Symposium on "Fish Stock Assessments and Predictions: Integrating Relevant Knowledge" (co-sponsored by ICES): Bergen, Norway, 4–6 December 2000.
- "Hydrobiological Variability in the ICES Area, 1990–1999, the 2nd Decadal Symposium": Edinburgh, Scotland, UK, 8–10 August 2001. Co-Conveners: R. R. Dickson (UK) and J. Meincke (Germany). This Symposium is co-sponsored by IOC, NAFO, and institutes in Aberdeen, Lowestoft, and Hamburg and is in cooperation with the Scottish Association for Marine Science who are holding a Symposium immediately prior to the ICES Symposium. ICES has been invited to co-sponsor this symposium (see below). "Capelin – What Are They Good For? Biology, Management, and the Ecological Role of Capelin": Reykjavik, Iceland, 23–27 July 2001: Co-Conveners: H. Vilhjalmsón (Iceland) and J. Carscadden (Canada).
- "Acoustics in Fisheries and Aquatic Ecology": Montpellier, France, 10–14 June 2002 Co-Conveners: F. Gerlotto (France) and J. Massé (France). Co-sponsors: Acoustical Society of America, UK Institute of Acoustics, Société Française d'Acoustique.

The Committee noted that plans are well advanced for the first three of these symposia, and that flyers announcing them are now available.

10.3 Prospects and Proposals for Additional Future Symposia

The Committee supports in principle resolutions for the following ICES Symposia, subject to appropriate financial arrangements being made:

- “Fish Behaviour in Relation to Scientific and Fishing Operations” in Bergen, Norway in April 2003 with Å. Bjordal (Norway) and S. Walsh (Canada) as Co-Conveners.
- An ICES/PICES/GLOBEC Symposium on “The Role of Zooplankton in Global Ecosystem Dynamics: Comparative Studies from World Oceans” to be held during the spring 2003, at a location in Europe to be agreed, with R. Harris (UK) and T. Ikeda (Japan-PICES) as Co-Conveners.
- “The Precautionary Approach to Fisheries Management: Lessons Learned and Future Directions” in Valparaíso, Chile in Late Aug/early September 2003 with L. Richards (Canada), and others yet to be identified as Co-Conveners.
- “Influence of Climate Change on North Atlantic Fisheries” in Bergen, Norway in 2004 with R. Cook (UK), K. Drinkwater (Canada), and H. Loeng (Norway) as Co-Conveners.

The Committee also supported resolutions for ICES to co-sponsor the following symposia:

- Conference on the 70th Anniversary and Achievements of the Continuous Plankton Recorder (CPR) to be held in Edinburgh, UK on 7 August 2001. This Conference is to be held in conjunction with the ICES 2nd Decadal Symposium (see above).
- NAFO Symposium on Deep-Sea Fisheries (Co-Conveners: J. Gordon (UK), T. Koslow (Australia), and J. Moore, (USA) to be held from 12–14 September 2001 in Havana, Cuba.
- NAFO/CSIRO Symposium on Elasmobranch Fisheries (provisional title) in September 2002 with T. Walker (CSIRO), J. Musick (USA), and P. Walker (Netherlands) as Co-Conveners.

12th Dialogue Meeting (Bonn, September 2000)

Only a summary report of the meeting was available and it was decided to postpone discussion until the full report of the meeting was available.

11 MATTERS ARISING FROM THE PUBLICATIONS COMMITTEE

There were no matters arising from the Publications Committee.

12 MATTERS REFERRED TO THE COMMITTEE BY THE BUREAU OR COUNCIL

The Bureau had advised the Committee to consider ways that salmon issues could be dealt with at future Statutory Meetings. The Committee drafted a Resolution to establish a Steering Group to consider the matter and then report to the Committee at the Mid-Term Meeting.

13 ADVISORY COMMITTEE MATTERS

In the light of the pending changes to the Advisory structure, no specific issues were raised. The Committee hoped that now that MCAP has been established it would be able to work in concert with that Committee. The further consideration of this liaison will be carried out at the Mid-Term Meeting.

14 DRAFT RESOLUTIONS FROM ADVISORY AND SUBJECT/AREA COMMITTEES

14.1 Draft Resolutions

The Committee considered only those Draft Resolutions that it had not seen and approved at its Mid-Term Meeting. A number of detailed comments and alterations with regard to these were made, including:

Consultative Committee: There was extensive discussion on the question of how to accommodate salmonid issues at the Statutory Meeting. It was hoped that a conclusion to this discussion could be reached at the Mid-Term Meeting.

Oceanography Committee: This Committee has initiated a thorough review of its working group structure with a view to encouraging groups to provide the information ICES requires as well as satisfying academic needs. The Committee strongly endorses the role of ICES in GLOBEC.

Resource Management Committee: Major initiatives include the establishment of a Working Group on Methods of Fish Stock Assessment, the Workshop FLEKSIBEST and the setting up of training courses on Fish Stock Assessment Techniques.

Marine Habitat Committee: The terms of reference of the Study Group on Ecosystem Assessment and Monitoring were extensively revised as it was considered that these were tasks which would be dealt with more directly by the new Advisory Structure. A restructuring of the Working Groups dealing with Marine Mammals issues was noted.

Mariculture Committee: It was noted that the Working Group on the Application of Genetics in Fisheries and Mariculture was highlighting cases where genetics provides results that have been used in the management of marine species. The results of this work would be brought to ACFM's attention.

ACFM: It was noted that all Assessment Working Groups had been allocated terms of reference in response to the adoption of the ICES Quality Policy.

Living Resources Committee: An initiative with regard to developing an ICES contribution to the Census of Marine Life was supported.

Baltic Committee: This Committee was launching a major initiative with respect to ecosystem advice in the Baltic but was satisfied that there was no conflict with the Advisory Committees work as this was addressing only the relevant scientific issues.

ACME: A task to the Working Group on Ecosystem Effects to address a request from a Client Commission was declined pending closer consideration of the issue by MCAP.

14.2 Study/Working Groups to be Renamed, Established or Dissolved

The list of established, renamed and dissolved groups is provided below in Table 3.

14.3 New Study/Working Group Chairs

The list of new Chairs is provided in Table 4.

15 TERMS OF REFERENCE FOR 2001 MID-TERM MEETING OF CONSULTATIVE COMMITTEE

In addition to routine terms of reference concerning the next Annual Science Conference and Statutory Meeting, the following items were proposed for inclusion on the mid-term agenda of the Committee:

- Ecosystem Advice and the Advisory Process
- Specialist interests in ICES, including a salmon initiative
- The Plan Fish Stock Assessment Courses
- The Science Committee Work Plans
- Strategic issues
- Improved treatment of Survey Working Group reports
- Follow-up to the 12th Dialogue Meeting
- Elect a Vice-Chair.

16 ANY OTHER BUSINESS

Survey Working Group reports

The Committee considered in some detail a proposal by the Resource Management Committee for a common forum to consider Survey Working Group/Study Group reports at future Statutory Meetings. The Committee noted that these reports are spread across the Resource Management, Living Resources and Baltic Committees but that there was a clear case for them to be dealt with in an integrated way. The Committee decided to consider this issue further at its Mid-Term Meeting.

17 CLOSE OF MEETING

The Chair expressed appreciation for the very hard work done by the Committee during the period of his tenure. The Chair-elect paid tribute to the performance of the Chair.

TABLE 1

Provisional Programme

89th Statutory Meeting

Radisson SAS Scandinavia Hotel in Oslo, Norway from Monday 24 September to Wednesday 3 October

2001 ASC

Radisson SAS Scandinavia Hotel in Oslo, Norway from Wednesday 26 September (General Assembly) to Saturday 29 September (Closing Session)

Open Lecture: T. Stoltenberg: "Our Common Future: A Political Perspective on the Ocean and Related Issues"

Centenary : Thursday PM

2001, Present: the Challenges Facing ICES

Invited Talks

Benguela Ecosystem Management – C. Maloney (South Africa)

Ecosystem Effects of Fisheries – S. Hall (Australia)

Sessions:

LIVING RESOURCES

The Life History, Dynamics, and Exploitation of Living Marine Resources: Advances in Knowledge and Methodology – Co-Conveners: J. Addison (UK), R. Dufour (Canada), K. Friedland, (USA), Kjesbu (Norway), P. Kamermans (Netherlands), C. Lockyer (Denmark), P. Walker (Netherlands), and J.-C. Holst (Norway)

The Response of Cephalopod Populations and Fisheries to Changing Environment and Ecosystems – Co-Conveners: U. Piatkowski (Germany), R. O'Dor (Canada) and T. Borges (Portugal)

The Stock Structure of Atlantic Cod: State of the Art – Co-Conveners: S.-E. Fevolden (Norway), D. Ruzzante (Denmark), T. Cross (Ireland), and A. K. Danielsdóttir (Iceland)

Developing Salmon Conservation Limits- Recent Progress and Reviews – Conveners: N. O'Maoileidigh (Ireland), .

FISHERIES MANAGEMENT AND STOCK ASSESSMENT

Case Studies in the Systems Analysis of Fisheries Management – Co-Conveners: J.G. Sutinen (USA), D.E. Lane (Canada), and B. Rothschild (USA).

Application of Mark-Recapture Experiments to Stock Assessment – Co-Conveners: J. Bratney (Canada), Dr N. Cadigan (Canada) and others to be identified.

Quality and Precision of Basic Data Underlying Fish Stock Assessment and Implications for Fisheries Management Advice – Co-Conveners: M. Pastoors (Netherlands) and J. Simmonds (UK)

Catchability and Abundance Indicators – the Influence of Environment and Fish Behaviour – Co-Conveners: P. Fréon (France), D. Skagen (Norway), and G. Stefansson (Iceland)

ECOSYSTEM and ENVIRONMENTAL MANAGEMENT

What Information Does Ecosystem Management Need from Ecologists and Gear Technologists to Assess Ecosystem Effects of Fishing and Implement Policies? – Co-Conveners: J. Rice (Canada), K. Essink (Netherlands) and R. Ferro (UK).

Eutrophication, For Better or For Worse: Can It Be Controlled? – Co-Conveners: L. Føyn (Norway), E. Andrzejewicz (Poland), +(Netherlands/Belgium) and (US/Canada)

Use and Information Content of Ecosystem Metrics and Reference Points – Co-Conveners: J. Rice (Canada) and R. Lanter (Netherlands)

Mini-Symposium on Ecosystem Change in the Baltic – Co-Conveners: S. Hansson (Sweden), E. Aro (Finland), B. MacKenzie (Denmark) I. Vuorinen (Finland), and T. Raid (Estonia).

OCEANOGRAPHY AND MARINE ECOLOGY

Growth and Condition in Gadoid Stocks and Implications for Sustainable Management – (Co-Conveners: T. Marshall (Norway), J.-D. Dutil (Canada), and L. Buckley (USA))

Transport Processes in the North Atlantic – Co-Conveners H. Loeng (Norway), T. Rossby (USA), and W. Turrell (UK)

COASTAL ZONE

Land-based Systems for Commercial Production in Saltwater Aquaculture – (Co-Conveners: U. Waller (Germany) and A. Dosdat (France))

Sustainable Development and Conservation of Natural Resources of Coastal Zone – Co-Conveners: J. Støttrup (Denmark) and P. Degnbol (Denmark)

TABLE 2

Provisional Programme

90th Statutory Meeting

Bella Center, Copenhagen , from Tuesday 1 October to Tuesday 8 October

2002 ASC

Bella Center, Copenhagen, from Tuesday 1 October to Saturday 5 October

The main theme will be to state the future role of ICES having taken into account the historical reflection in 1999, and the consultations with clients in 2001. There will be a full Centenary Day.

Open lecture:

Centenary Day:

Invited Lectures:

Sessions:

1. **Unaccounted Mortality in Fisheries.** Proposed by Mike Breen and Alain Fréchet.
2. **Use of Immunomodulators in Marine Fish Feeding: Possible Beneficial and Detrimental Effects on Immune Systems** Co-Conveners: I. Bricknell (UK), S. Baynes (UK), S. Wadsworth (UK), O. Vadnstein (Norway), and J. Skjerno (Norway), or T. Ellis (UK)
3. **Improvements in Quality of Cultured Juvenile Fishes** (a carry-over from ASC 2001, as earlier proposed) Co-Conveners: P. Sorgeloos (Belgium), D. Bengston (USA), B. Koven (Israel), and E. Kjorsvik (Norway) or K. Pittman (Norway)
4. **Environmental Influences on Trophic Interactions** to be co-convened by L. Valdes (Spain) (or a suitable substitute from the WGZE) and J. C. Therriault (Canada).
5. **The Integration of (Aacoustic) Survey Technologies and Marine Biological Data** Co-Conveners: E. Jagtman (Netherlands), J. Side (UK), and H. Rumohr (Germany)
6. **Advances in Knowledge of Stock Definition, Abundance Measurement, and the Ecosystem Effects of Exploiting Deep Sea Resources** Co-Conveners: N. Hammer (Germany), P. Lorance (France), O. Bergstad (Norway), and J. Gordon (UK)
7. **Pelagic Fish Populations and Climatic Effects: Integrating Relevant Knowledge in Stock Assessment and Forecasting** Co-Conveners: F. Borges (Portugal), D. Skagen (Norway), C. Porteiro (Spain), and B. Rothschild (USA)
8. **Size-Dependency in Population Processes of Marine and Freshwater Organisms** Co-Conveners: P. Pepin (Canada), E. Houde (USA), H. Gislason (Denmark), J. Pope (Norway), and J. Rice (Canada)
9. **Interactions between the Distribution of Cetaceans and Fisheries.**
10. **Census of Marine Life: Turning Concept into Reality** Co-Conveners: (J. G. Pope (Norway), C. B. Bannister (UK), and O. A. Bergstad (Norway)
11. **Multi-Disciplinary Approach to the By-Catch and Discard Problem** Co-Conveners: A. Revill (UK), J. Cotter (UK), S. Pascoe (UK), and U. Dahm (Germany)
12. **The Scope and Effectiveness of Stock Recovery Plans in Fisheries Management** Convener: P. Connolly (Ireland) + Possible Co-Conveners: O. Hagström (EC) , L. Karlsson (Sweden), T. Jakobsen (Norway)
13. **ICES/IOC Sea-Going Workshop on Pelagic Biological Effects Methods – Results and Conclusions.** Co-Conveners: P. Matthiessen (UK), T. Lang (Germany), and K. Hylland (Norway)
14. **North Atlantic Processes**

Table 3 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 2000 Annual Science Conference.

Type of Action	Name
Dissolved	Working Groups
	Shelf Seas Oceanography [WGSSO]
	Marine Mammal Habitats [WGMMHA]
	Marine Mammal Population Dynamics and Trophic Interactions [WGMMPD]
	Study Groups
	Nephrops [SGNEPH]
	Marine Habitat Mapping [SGMHM]
	Methods for Measuring the Selectivity of Static Gear [SGMMG]
	Estimation of the Annual Amount of Discards and Fish Offal [SGDIB]
	Market Sampling Methodology [SGMSM]
	Scientific Basis for Ecosystem Advice in the Baltic [SGBEAB]
	Planning Group for Pelagic Acoustic Surveys in ICES Sub-Area VIII and IX [PGPAS]
	Biology and Assessment of Deep-Sea Fisheries Resources [SGDEEP]
Established/Re-established	Working Groups
	Methods on Fish Stock Assessment Methods [WGMG]
	Marine Mammal Population Dynamics and Habitats [WGMMPH]
	Marine Habitat Mapping [WGMHM]
	Biology and Assessment of Deep-Sea Fisheries Resources [WGDEEP]
	Planning Groups
	Comparing the Structure of Marine Ecosystems in the ICES Area [PGECML]
	Ecological Quality Objective Requests [PGEQO]
	HAC Data Exchange Format [PGHAC]
	Workshop on Ecosystem Models [PGEM]
	Study Groups
	Herring Assessment Units in the Baltic Sea [SGHAUB]
	Target Strength Estimation in the Baltic Sea [SGTSEB]
	GEOHAB Implementation in the Baltic [SGGIB]
	Estimation of Spawning Stock Biomass of Sardine and Anchovy [SGSBSA]
	Evaluation of Current Assessment Procedures for North Sea Herring [SGEHAP]
	Sea Bass [SGBASS]
	Further Development of the Precautionary Approach to Fisheries Management [SGPA]
	Modelling of Physical/Biological Interaction [SGMPI]
	Workshops
	Workshop on Deep-Seabed Survey Technologies [WKDSST]
	Steering Group
	Courses in Fish Stock Assessment Techniques [SGCFAT]
	Sea-Going Workshop on Pelagic Biological Effects Methods [SGSEA]
Renamed	Study Group on an ICES/IOC Checklist of Phytoplankton (SGPHYT) renamed
	Study Group on an ICES/IOC Microplankton Protist List [SGPHYT]

Table 4 **New Study/Working Group Chairs**

The Council's attention is drawn to the following new Chairs of Working Groups, Study Groups, and other Groups and Workshops:

Chairs	Group
	Working Group
M. Basson (UK) (Chair: to be elected at the October 2000 ACFM meeting)	Herring Assessment Working Group for the Area South of 62°N [HAWG] Assessment of Demersal Stocks in the North Sea and Skagerrak [WGNSSK]
E. Jagtman (The Netherlands)	Marine Habitat Mapping [WGMHM]
R. Law (UK)	Marine Chemistry Working Group [MCWG]
M. Plikshs (Latvia)	The Baltic Fisheries Assessment Working Group [WGBFAS]
S. Mehl (Norway)	The Arctic Fisheries Working Group [AFWG]
A. Gudmundsdottir (Iceland)	The Northern Pelagic and Blue Whiting Fisheries Working Group [WGNPBW]
O.A. Bergstad (Norway)	Biology and Assessment of Deep-Sea Fisheries Resources [WGDEEP]
M. Armstrong (Northern Ireland)	Assessment of Northern Shelf Demersal Stocks [WGNSDS]
K. Hylland (Norway)	Biological Effects of Contaminants [WGBEC]
S. Gollasch (Germany)	Introductions and Transfers of Marine Organisms [WGITMO]
S. Rowlatt (UK)	Marine Sediments in Relation to Pollution [WGMS]
D. Somerton (USA)	Fishing Technology and Fish Behaviour [WGFTFB]
R.D.M. Nash (UK) – co-chair	Recruitment Processes [WGRP]
Y. Simard (Canada)	Fisheries Acoustics Science and Technology [WGFAST]
A. Bjørge (Norway)	Marine Mammal Population Dynamics and Habitats [WGMMPH]
	Study Group
J. Simmonds (UK)	Evaluation of Current Assessment Procedures for North Sea Herring [SGEHAP]
S. Gollasch, (Germany)	ICES/IOC/IMO Study Group on Ballast and Other Ship Vectors [SGBOSV]
Y. Stratoudakis	Estimation of Spawning Stock Biomass of Sardine and Anchovy [SGSBSA]
E. Ojaveer, (Estonia), and G. Kornilovs, (Latvia)	Herring Assessment Units in the Baltic Sea [SGHAUB]
G. Stefansson (Iceland) ¹	Further Development of the Precautionary Approach [SGPA]
M. Pawson (UK)	Sea Bass [SGBASS]
F. Arrhenius (Sweden)	Target Strength Estimation in the Baltic Sea [SGTSEB]
K. Kononen (Finland)	GEOHAB Implementation in the Baltic [SGGIB]
L. Edler (Sweden)	ICES/IOC Microplankton Protist List [SGPHYT]
F. Saucier (Canada)	Modelling of Physical/Biological Interaction [SGMPI]
	Planning Group
P.G. Fernandes (UK)	Herring Surveys [PGHERS]
H.R. Skjoldal (Norway)	Ecological Quality Objective Requests [PGEQO]
D. Reid (UK)	HAC Data Exchange Format [PGHAC]
J.G. Pope (Norway)	Comparing the Structure of Marine Ecosystems in the ICES Area [PGECML]
C. Frid (UK)	For a Workshop on Ecosystem Models [PGEM]
T. Sigurdsson (Iceland)	Redfish Stocks [PGRS]
	Steering Group
K. Hylland (Norway)	Sea-Going Workshop on Pelagic Biological Effects Methods [SGSEA]
E. Pastuszak (Poland)	ICES/HELCOM Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea [SGQAC]
A. Isaksson (Iceland)	Develop Salmonid Science Initiatives in ICES [SG]
R. Stephenson (Canada)	Courses in Fish Stock Assessment Techniques [SGCFAT]
	Workshop
T. Noji (Norway)	Deep-Seabed Survey Technologies [WKDEEP]
K. Guldbrandsen Frøysa (Norway)	Workshop on FLEKSIBEST – an age-and length-based assessment tool [WKFLEK]

¹ G. Stefansson later withdrew and was replaced by C. Bannister

ANNEX 1

DRAFT

Inventory by Consultative Committee of recent ICES material of relevance as background material for future ICES ecosystem advice

FISHERIES TECHNOLOGY COMMITTEE

Recent documents from the Fisheries Technology Committee that have relevance as background material for future ICES ecosystem advice are the following:

Anon. 2000 Report of the Working Group on Fishing Technology and Fish Behaviour. ICES CM 2000/B:03

This document has a chapter on unaccounted mortality in commercial fisheries, and a section on the unintended effects on the seabed and associated communities of fishing operations and gears, including ghost fishing.

Anon. 2000 Report of the Working Group on Fisheries Acoustics Science and Technology. ICES CM 2000/B:04

This document has a chapter on seabed classification by acoustic and visual methods.

Anon. 1999 Report of the Working Group on Fishing Technology and Fish Behaviour. ICES CM 1999/B:01

This document has a chapter that considers various methodologies to study physical impacts of fishing gear on benthos and bottom substrates and possible modifications to fishing gears to reduce these impacts.

OCEANOGRAPHY COMMITTEE

The Oceanography Committee's working groups and workshops deal with a range of topics in physical, chemical, and biological oceanography which are relevant to ecosystem advice. In several cases groups have already produced inventories of ongoing monitoring, which provide time series of important environmental variables and components of the ecosystem.

1. Working Group on **Oceanic Hydrography**: Initiated the Annual Ocean Climate Status Summary using regional summaries within the ICES area.
2. Working Group on **Shelf Seas Oceanography**: Developing coupled physical-chemical-biological models for ecosystems, including use of data assimilation.
3. Working Groups on **Phytoplankton and Zooplankton Ecology**: In addition to basic work on plankton ecology, these groups have initiated

inventories of monitoring programmes and are looking into anthropogenic forcing.

4. Working Group on **Harmful Algal Blooms**: Collate national reports, study physical, chemical, and anthropogenic factors, looking at reconstructed long time series.
5. Working Group on **Cod and Climate Change**: Published studies of long-term ecosystem changes in the NW Atlantic and the North Sea. Developing coupled physical-biological models of population processes.
6. Working Group on **Recruitment Processes** and Study Group on **Incorporation of Process Information into Stock-Recruitment Models**: How environmental effects may be incorporated into fisheries advice.
7. Working Group on **Seabird Ecology**: Role of seabirds as top predators. Monitoring of populations.
8. Working Group on **Marine Data Management**: underpinning service for ecosystem monitoring.

RESOURCE MANAGEMENT COMMITTEE

The Committee has begun to develop a Work Plan to 'define and develop the scientific basis for an ecosystem approach to management' – within the follow-up of the Strategic Plan.

Reports of various survey working groups describe time series of fishery-independent data (IBTSWG, PGSPFNS).

The Working Group on Fisheries Systems is developing methodology for system evaluation in a multidisciplinary context.

Methods-related Working Groups are becoming increasingly broad and concerned with ecosystem considerations (e.g. Comprehensive Fisheries Evaluation Working Group treatment of precautionary approach, FLEXIBEST model workshop, Methods for multispecies considerations).

MARINE HABITAT COMMITTEE

The reports of these groups can be found at www.ices.dk/reports/mhc:

1. Study Group on Marine Habitat Classification and Mapping (SGMHM)

This Study Group has co-organised a series of workshops on marine habitat classification, and works towards a classification system useful for ICES needs, as well as the subsequent standardisation and co-ordination of mapping.

2. Working Group on the Effects of Aggregate Extraction on the Marine Ecosystem (WGEXT)

A long-standing Working Group linking geological expertise to ICES. Beyond an inventory of ongoing extraction activities and recent developments in mapping technology, this working group is increasingly involved in addressing effects on potentially critical habitats, such as spawning grounds.

3. Working Group on Marine Mammals Habitats (WGMMHA)

The Working Group represents expertise in marine mammal research, with emphasis on habitat issues including effects of contaminants on marine mammals.

4. Benthos Ecology Working Group (BEWG)

This is a long-standing Working Group with expertise in benthic biodiversity and benthos monitoring, including QA issues.

5. Working Group on Biological Effects of Contaminants (WGBEC)

The work of this group is focussed on research concerning the translation of the presence of contaminants to their biological effects.

6. Working Group on Statistical Aspects of Environmental Monitoring (WGSAEM)

This Working Group provides essential expertise to many other working groups with respect to the design of monitoring programmes, and multivariate analysis of data sets.

7. Working Group on Marine Sediments in Relation to Pollution (WGMS)

This Working Group has done extensive work at the request of ACME. At present it is re-focussing on the effects of contaminants in the sediment in marine ecosystems.

8. Marine Chemistry Working Group (WGMC)

A long-standing Working Group linking chemical expertise to ICES, in the areas of chemical oceanography, organic chemistry, and trace metals.

9. Study Group on Ecosystem Assessment and Monitoring (SGEAM)

This Study Group provides a forum to discuss the basis for ecosystem-based advice for scientists primarily coming from the environmental sciences.

MARICULTURE COMMITTEE

The Working Group reports on Environmental Interactions of Mariculture, Application of Genetics in Fisheries and Mariculture, and Pathology and Diseases of Marine Organisms all provide information/advice in one form or another that would apply to ecosystem advice. The input from these Groups applies not only to individual species, projects, or countries, but applies to the ecosystem as a whole.

As an example, diseases in one particular stock of fishes/shellfish could spread throughout several stocks, especially if some of these stocks are mobile or are moved around from one location to another as might be done in a mariculture operation. Also, disease can be spread to various ecosystems throughout the world as animals/plants are moved deliberately or inadvertently. Assessments of such activities have been provided in country reports and have been utilised in preparing advice for programs such as HELCOM and OSPAR.

Similarly, the application of genetic knowledge in fisheries and mariculture provides information on activities that could affect various ecosystems. As an example, the use of genetically modified organisms in a mariculture operation could possibly have an impact on wild stocks if escapes were to take place and interbreeding occurred between the cultured and wild stocks. Advice of this type is provided to various commissions or countries seeking such advice.

Advice provided to HELCOM by the WG on Environmental Interactions of Mariculture on the effects of mariculture in the Baltic Sea certainly would be applicable to ecosystems and would be of general use elsewhere as well. Considerable concern is expressed over the potential of salmon escapes from net pens and the interaction they might have from the perspective of an environmental impact, as well as any genetic or ecological impact. The impact of finfish culture in net pens or cages is also of concern regarding the possible effects of food and fecal material adding nutrients to the environment or causing, possibly, changes in species diversity in the vicinity of the pens. Information gathered of this type can be formulated into advice and provided to concerned organisations.

LIVING RESOURCES COMMITTEE

The Living Resources Committee's Working Groups and Study Groups are mainly about fish life history, surveys, otolith reading, and studies in support of assessments, and these groups have not undertaken any specific ecosystem type thinking or work. Some Working Groups contain information that may be useful to future ecosystem studies however. For example,

- a) the Working Group on Marine Mammal Population Dynamics and Trophic Interactions, whose reports include sections on the abundance of seals and porpoises, and on the diets of marine mammals,
- b) the Working Group on Cephalopod Fisheries and Life History, which contains information on the distribution and abundance of squids and cuttlefish that may be relevant to food chain studies.
- c) the Working Group on Crangon, which includes abundance data for this important prey species.

This Committee could in principle play an important role in ecosystem studies if it was considered necessary to collect information on the abundance, diet, growth, and mortality of other key species, but this would need to be 'commissioned' and targeted carefully at the request of ecosystem scientists.

BALTIC COMMITTEE

The report of the Study Group on the Scientific Basis for Ecosystem Advice in the Baltic is available at www.ices.dk/reports/btc/2000.

ACFM

Fisheries advice is an important element in ecosystem advice and most of the ACFM advice includes ecosystem considerations. This is true even when there are no apparent environmental considerations in the assessment. Ecosystem considerations are focused on growth changes in response to environmental or stock structure changes and changes in the natural mortality. Furthermore, recruitment variation, whether caused by environmental or stock influences, is part of the basis for estimating biological reference points.

The assessments are often unspecific in how changes in stock productivity are incorporated, and the fact that this is an important and traditional element of fish stock assessment is therefore often overlooked by other disciplines. Key examples are the age dependence of natural mortality and the procedures used for constructing mean weight-at-age for short-term projections.

Species interactions analyses have a long tradition within fish stock assessment and various assessment models are

established, e.g. BORMICON, North Sea and Baltic Sea Multispecies Assessment models, FLEKSIBEST. These models require extensive inputs, inputs that are often not available on the yearly scale on which the assessments operate. These models are developed in parallel to the assessments used in formulating advice, and results from the multispecies work are taken over in the assessments when such results have been firmly established. Multispecies models have been used for specific studies of how incorporating species interaction in the models will affect the projections, e.g. the studies on the effects of a general mesh size change for the North Sea Demersal fisheries (North Sea Task Force, 1992). The revision of natural mortality used for assessing North Sea fish stocks and the account of cannibalism incorporated in the assessment of NEA cod are other examples. Recent work on shrimp assessment includes explicit accounts of fish predation.

While much of the focus has been on incorporating environment directly in assessment methods, the environmental influence on the abundance indices, e.g. from trawl surveys, should not be overlooked. There could be much to gain by addressing the effects of environmental conditions on surveys or on the commercial CPUE measures that are used in the assessments.

Environment conditions are a key determinant for the overall productivity of the stocks. This is well recognised in fish stock assessment and is dealt with by restricting the analysis (if possible) to periods when it is believed that the stock productivity is at a level comparable to the current conditions. An example is the stock-recruitment relationship applied in the Baltic cod which is constructed based on data for the period 1983-date rather than the full time series which incorporates periods with higher productivity than exists at present. Also in the evaluation of the effects of a change in the gear selectivity considerations were given to these long-term changes in the productivity. However, it should be realised that management is done on a yearly scale and although some decisions have longer ranging implications management is adaptive on a decade scale.

Although environmental impacts are considered there is clearly scope for improvements. The medium-term projections usually treat variations in growth, maturity etc. as white noise, not reflecting environmental variations that exist on a decade scale. Also long-term projections might be improved by inclusion of knowledge of such long-term variations.

Working Groups that produce material relevant to ecosystem advice:

No	Working Group	Acronym
1.	Herring Assessment	HAWG
2.	Baltic Salmon and Trout	WGBAST
3.	Baltic Fisheries	WGBFAS
4.	North Atlantic Salmon	WGNAS

5.	Nephrops	WGNEPH
6.	Arctic Fisheries	AFWG
7.	Northern Pelagic and Blue Whiting	WGNPBW
8.	North-Western	NWWG
9.	North Sea and Skagerrak Demersal	WGNSSK
10.	Northern Shelf Demersal	WGNSDS
11.	Pandalus	WGPAND
12.	Eel	WGEEL
13.	Southern Shelf Demersal	WGSSDS
14.	Mackerel, Horse mackerel, Sardines and Anchovies	WGMHSA
15.	Harp and Hooded Seals	WGHARP
16.	Fisheries on Deep Water Species	WGDEEP

Furthermore, ACFM have study groups that produce relevant material.

ACME

The overview paper: Ecosystem Advice – What ICES is Providing and What It Can Provide, by H.R. Skjoldal, as presented at the ICES Environmental Dialogue Meeting.

From the Draft 2000 ACME Minutes:

Annex 3: Initial considerations of a scientific framework for ICES ecosystem advice, including an ecosystem approach for the sustainable use and protection of the marine environment (the annex builds on section 5 of the draft SGEAM 2000 report).

Annex 4: Reference points and ecosystem considerations (the annex builds on section 7 of the draft WGEKO 2000 report).

From the 2000 ACME Report:

Annex 9: Structure, process, and limitations of environmental assessments and production of environmental quality status reports.

FISHERIES TECHNOLOGY COMMITTEE (B)

Chair: O.A. Misund (Norway)
Rapporteur: Y. Simard (Canada)

The Fisheries Technology Committee met on 24 September from 09.30–13.00 (10 Committee members present) and on 29 September from 13.30–18.00 (35 present, including 14 Committee members).

The Chair opened the meeting and the Committee appointed Y. Simard (Canada) as Rapporteur. The agenda was adopted without change.

Committee business

Reports from Working Groups

Working Group on Fisheries Technology and Fish Behaviour

The Working Group Chair, A. Engås, presented Doc. B:03, the report of the Working Group. He recalled the terms of references for the meeting in Ijmuiden, The Netherlands, on 10–14 April 2000, which were: a) review the work of the study groups having work on the topic review and consider recent research into unaccounted mortality in commercial fisheries; b) review ongoing work for reducing unintended effects on seabed and associated communities of fishing operations and gears, including ghost fishing. For topic a, among other things, he pointed out the item 6.2 of the report (p.78) discussed the reason why additional sources of mortality still remain unquantified. He then stressed the recommendation of item 7.2 of the report (p.79) concerning the need for a meeting of assessment biologists and fisheries managers. The recommendation also suggested a Theme Session on “Unaccounted Mortality in Fisheries” to be held in 2002.

The Chair recalled the discussion on how to get absolute estimates from trawl surveys and a proposition for the ASC in Oslo in 2001 for a Theme Session on “Catchability and Influence of Environment and Fish Behaviour. Catch per unit effort (CPUE) is assumed constant over time, but there is evidence that catchability varies with environmental and other factors that are not constant over time. This adds white noise to data and makes CPUE difficult to interpret. Therefore the Committee agreed to propose a Theme Session on that topic for 2001.

For the topic b, it was recalled that all fishing activities have influences that extend beyond removing target species. There was a EU project on this subject and this report was reviewed by ICES at the request of EC DG Fisheries.

The ensuing discussion noted that measures taken resulted in significant reduction of benthos in the catch but to a low decrease of the non-commercial fish species. Reduction of post mortality is also an important aspect of the question. There was an exploration of the possibility to reduce the number of bobbins in flume tanks (Canadian project). It was proposed to carry out experiments, which require expertise from both biologists and gear technologists. Consequently, the Committee agreed to support a theme session on this topic to be included in the 2001 ASC.

The Committee agreed that the new Chair for this Working Group is D. Somerton. In accepting his appointment D. Somerton expressed his concerns about the fact that there were not enough topics for the next meeting. However, the Chair drew attention to an additional topic requested by ACFM to help ICES respond to a request from IBSFC concerning selection of Baltic cod.

Study Group on Mesh Measurements Methodology

R. Fonteyne, Chair of the Study Group presented Doc. B:02. The Study Group met in Ijmuiden on 8-9 April. The terms of reference listed in the report were recalled, and the work done, notably on the definitions and on the inventory of netting material, were presented. The Study Group will have to continue the work for at least one more year. It included members from many countries, but it was stressed that there is a need for input from other countries that have not yet joined the group. The Group decided that it will start laboratory experiments looking at differences between measurements with constant force (ICES 4kg) and with constant stress (TSF). The measurement methodology is established. In 2000–2001, the Group will work by correspondence on netting material, realise studies on mesh measurement work, and will meet again in April 2001 in Seattle.

Study Group on Methods for Measuring the Selectivity of Static Gear

Doc. B:01 was presented by H.A. Carr, the Study Group Chair. The Study Group met in Ijmuiden on 8-9 April. The Study Group plans to have a draft of the manual prepared by January 2001, intended for publication in the *Cooperative Research Report* series. The focus will be mostly on demersal fish.

Working Group on Fisheries Acoustics Science and Technology

The Working Group Chair, F. Gerlotto, presented Doc. B:04, the 2000 Report of the Working Group. He recalled the five terms of references for the meeting and the other items of the business, namely the creation of a web site and the appointment of a new Chair. There were 41 participants, from 14 countries. Twenty-eight papers were presented. The work done under each topic was presented. Among others, the success of silent vessels in regard to fish avoidance was noted as well as the recognition that Target Strength depends on several variables. The Group also considered the creation of a Study Group chaired by F. Arrhenius, on the Target Strength of Baltic herring, the definition of acoustic units and symbols, the Hydro Acoustic (HAC) standard data exchange format, the communications on the bottom classification, the presentation of new methods and techniques, and the publication of the ICES *Cooperative Research Report* on "Echo-Trace Classification". It was perceived by some members that this series is not valued as it is grey literature. It was considered that ICES should do something to improve the status of the *Cooperative Research Reports*.

Joint Session of the Working Group on Fisheries Technology and Fish Behaviour (WGFTFB) and the Working Group on Fisheries Acoustics Science and Technology

F. Gerlotto presented Doc. B:05 in the absence of J. Massé, who had chaired the one-day session. Fifteen papers were presented on various aspects of fish behaviour, interference of vessels, bottom effects, and on new observation methods, including Lidar. It was agreed that, in future, the Joint Session would be co-Chaired by the two Working Group Chairs in order to facilitate its preparation and integration with the other specific activities of the two Groups. The theme proposed for the 2001 meeting "The Impact of Fish Behaviour on the Precision and Accuracy of Stock Assessment".

The next meetings of the Working Group on Fishing Technology and Fish Behaviour and the Working Group on Fisheries Acoustics Science and Technology will be held in April 2001 in Seattle, USA. W. Karp provided preliminary information on the arrangements for the meeting. The information will be distributed on the ICES Website.

ICES Strategic Plan

The Chair outlined the items of the ICES Strategic Plan that are relevant for the Committee. A main focus of the Plan is the ecosystem approach, which will imply specific work for various committees. This means the Committee will be concerned with working on the development of more optimal fishing gears, improvement of fisheries survey methodology and

hydroacoustics for fisheries and plankton surveys and bottom mapping, etc. The Chair distributed an outline of the Committee Work Plan for discussion. It was noted that Committee work would become more linked to the improvement of the precision and accuracy of stock estimation. It was stressed that the Committee should use the ecosystem approach argument to make the point about who should develop the new fishing gears: the fishing industry or science? It was pointed out that the Marine Habitat Committee also had a responsibility for bottom mapping issues. This would require close liaison with this Committee in order to avoid duplication of activities. It was pointed out that the Committee's responsibility concerning vessels does not appear in the Work Plan outline.

The Chair reminded the Committee that the Work Plan also specified the need for evaluation of the Working Groups. It was noted that there may be an advantage in merging the Working Groups on Fishing Technology and Fishing Behaviour and Fisheries Acoustics Science and Technology, as this may help to improve the precision and accuracy of fish stock estimates. The traditional joint session of these Groups might be used to look at behavioural questions and statistical analyses, because it is a common interest of the two groups. Some members considered that the link between these Groups was weak and that other mechanisms should be sought to work together. The Chair recalled that a proposal for a third Working Group on behaviour was not supported in 1999, or at meetings in 2000 of the Working Group on Fisheries Acoustics Science and Technology. It was also mentioned that the ICES Strategic Plan favours the creation of topics that are of common interest to many Working Groups. Such topics could become the object of comprehensive Theme Sessions convened by the Chairs of the relevant Working Groups. It was concluded that the Committee should try to draw more people into Working Group activities, including university scientists, by creating a better appeal for them by working on the possibility of publishing the research in reviewed Journal issues. The Chair closed the discussion by saying that the review process will last 18 months and that the Consultative Committee would like to see a clear emphasis on cross-Committee linkages.

During the second session, the Committee Work Plan outline was distributed to the participants for discussion. Many comments concerning the broadening of the Committee remit were made. The Committee's expertise is varied and can address wide activities and evaluate many kinds of technology. It was noted that the standardisation objective is not specifically written into Work Plan outline. It was also considered that the need for behavioural work and the ecosystem approach (see p. 15 of ICES Strategic Plan) is not stressed enough. The Committee considered that acoustics was a very special and unique tool to look at the ecosystem as a whole. It was also remarked that some target animals, namely plankton, were missing.

The Committee re-addressed the possible need for a change the working groups. However, there was no consensus on if and how this should be done.

The Chair then read the rest of the Committee Work Plan and asked for comments. He noted that the matter will be further discussed at the 2001 Working Group meetings and Committee sessions.

Forthcoming Symposia and Conferences

The Chair recalled that there were two proposals for a Theme Session on “The Influence of Behaviour on Assessment” for the 2001 Conference. The Committee agreed to merge these proposals. The Committee was also reminded of the proposal for a Theme Session on “Ecosystem Effects of Fishing”, and relevant proposals from other Committees.

The organisation of the ICES Symposium on “Acoustics in Fisheries and Aquatic Ecology”, scheduled for 10–14 June 2002, was outlined by F. Gerlotto. The Symposium Steering Group is: Gerlotto, Massé, Holliday, Farmer, Misund, Simmonds, Karp, Furasawaa, Carrera. The Symposium will be held in Corum in Montpellier (www.corum-montpellier.fr). The registration cost will be 350 Euro, including lunch and conference dinner. Further details will be announced from the Symposium Website which will also have a link from at www.ices.dk/symposia.

Publications

D. Reid presented the Echo Trace Classification *ICES Cooperative Research Report*, which was edited by him.

Documents

B:01	Study Group on Methods for Measuring the Selectivity of Static Gear (SGMMG)
B:02	Study Group on Mesh Measurements Methodology (SGMESH)
B:03	Working Group on Fishing Technology and Fish Behaviour (WGFTFB)
B:04 Ref. H	Working Group on Fisheries Acoustics Science and Technology (WGFAST)
B:05	Joint Session of the Working Group on Fishing Technology and Fish Behaviour (WGFTFB) and the Working Group on Fisheries Acoustics Science and Technology (WGFAST)

REFERENCE PAPERS: C:02, G:11

Census of Marine Life (CoML)

O. R. Godø, a member of the CoML Steering Committee, presented an overview of this international initiative, led by USA, and supported in part by the Sloan foundation. He explained that the CoML Administration Centre is located at CORE in Washington DC, and that the Steering Committee (scientific advice and plan) has members from USA, Canada, Norway, Japan, Peru, and Denmark. ICES, The Marine Board of EU, and the Niarchos foundation support the CoML initiative. There are discussions with the EU 5th Framework Programme. The CoML OBIS project has now been funded for six pilots projects (1.5 Sloan + NOPP (ONR and NSF)). Other projects from various countries were also funded, including one led by Dr K. Foote for the Gulf of Maine. A SCOR Working Group on “New Technology for Observing Marine Life”, Chaired by D. Farmer has also been formed.

Draft Resolutions

All Draft Resolutions were approved following presentation and re-wording as necessary.

Closure

The Chair gave a special thank you to F. Gerlotto who had now completed his term as Chair of the Working Group on Fisheries Acoustics Science and Technology.

OCEANOGRAPHY COMMITTEE (C)

Chair: H. Loeng (Norway)

Rapporteur: W. Turrell (UK)

The Oceanography Committee met on 25 September from 14.00–18.00 (19 present, including 10 Committee Members) and on Friday 29 September from 13.30–18.00 (32 present, including 11 Committee Members). In addition there was a meeting between the Committee Chair and Working Group Chairs on Tuesday 26 September at 17.00–19.00.

The meeting was opened by the Chair, and the Committee appointed W. Turrell (UK) as Rapporteur. The agenda was adopted after some minor rearrangements of the order of Working Group report presentations.

Matters referred by the Consultative Committee

Communication within ICES: In 1999 the Committee adopted a Draft Resolution to establish a Steering Group to oversee the ICES/GLOBEC Project Office. However, these plans were overtaken by a Council decision to establish a review group to consider the future of the Office.

Working Group Draft Resolutions: The Consultative Committee reviewed those Working Group Terms of Reference that were available in June, and all except two were in principle accepted. The Terms of Reference for the Working Group on Shelf Seas Oceanography were not accepted, and the Consultative Committee requested a thorough review of this Working Group by the Committee. This review was to be undertaken in the context of the Work Plan which additionally required the review of all Working Groups. The Terms of Reference for the Working Group on Phytoplankton Ecology were not available at the time of the June Consultative Committee meeting.

Matters arising from ACME

Delay to Working Group Reports: Some results from some of the Working Groups are used by ACME at their June meeting, but for a number of years ACME have found it difficult to get access to some of these reports at the time of their meeting. If a Working Group is asked to provide information to ICES, a deadline is usually given, and Chairs are asked to keep to allocated deadlines. This issue has been discussed twice at ACME, and was also brought forward to the Consultative Committee who noted this concern. Delays to reports also make the review process now established by the Committee more difficult, leaving little time for a proper review to be carried out before the Statutory Meeting.

The Chair of ACME noted that the quality of their advice depends upon the summaries of expert consensus views from the Working Groups, and that ACME advice can not be drawn up if reports are not formulated correctly, or delivered on time.

Chairs of Groups who provide advice to ACME noted that they received little or no feedback from ACME with respect to the advice they deliver. Without such feedback the Groups cannot improve their product. It was also noted that ACME must formulate their requests for information in more detail, so that the Groups understand more precisely what is required from them.

The Chair concluded by noting that not all Working Groups respond well to ACME requests, and that such advice should at least include a concise review of the scientific background behind discussions, with a clear summary of the conclusions of those discussions. A conclusion stating that more research is required, before the ACME request can be fully answered, is acceptable. Without clear and full responses ACME cannot issue advice sought from ICES by Client Commissions. The Chair explained that ACME itself does not retain the correct expertise and relies on the output from Working Groups.

ICES Strategic Plan

During the 1999 Statutory Meeting Council adopted the Draft Strategic Plan for the basis of consultation, while the Consultative Committee drafted a Work Plan with the purpose of supplying an implementation of the Strategic Plan. The Work Plan sets out in broad terms the interaction between the Science Committees. For each Committee it describes its remit, lists the specific Scientific Objectives which the work of that Committee is most relevant to, and lists four key areas of work for the next 2-5 years. For the Oceanography Committee the Work Plan tasks are; 1. Review and rationalise existing Committees, Working, Steering, and Study Groups (2 years), 2. Identify and establish priority areas of activity with particular emphasis on cross-Committee collaboration (3 years), 3. Identify areas of work to support the advisory process (3 years), 4. Contribute to the Annual Science Conference and Symposia (ongoing).

The Committee considered that one important objective had been left out of the list of links to the ICES Strategic Plan. This was Objective 3a “Establish the scientific basis for the Precautionary and Ecosystem Approaches and their application in ICES advice”. It was noted that the advisory objectives 4a-c were not listed as links to the Committee, and this was

questioned. The advisory objective relating to the need to explain the work of ICES (4c) was particularly discussed. The Committee wished the Consultative Committee to consider how the advisory objectives should be integrated with the work of the Science Committees, and how the correct resources can be provided with which to meet the advisory objectives (4a-c) and the institutional objectives. In fulfilling the ambitious list of scientific objectives in the Strategic Plan, priorities must be set with realistic milestones which take into account the available resources.

The four tasks set for the Committee within the draft Work Plan were then reviewed in detail.

- Task 1: *Review structure and function of Oceanography Committee Working Groups.* Over the current year Chairs had been asked to consider their own Working Groups. It was discussed whether specific questions from ACME might be better addressed using task-orientated Workshops or Study Groups, rather than within the main business of a Working Group. A sub-group of Committee members agreed to discuss this task intersessionally, along with the future of the Working Group on Shelf Seas Oceanography (see below).
- Task 2: *Identify cross-Committee links.* It was noted that the Working Group on Seabird Ecology already reports to one other Committee (Marine Habitats Committee). It was felt that in the area of Marine Chemistry there should certainly be closer links between these two Committees. The Chair of the Working Group on Marine Chemistry could be invited to summarise their work to meetings of the Oceanography Committee. The Baltic Committee might also wish to contribute to the work of the Working Group on Oceanic Hydrography, particularly with respect to the Annual ICES Ocean Climate Status Summary. It was noted that while inter-Committee links could be strengthened, so too could inter-Working Group links within the Committee itself.
- Task 3: *Identify areas of work to support the Advisory Process.* ACME already addresses questions to some of the Committee's Working Groups, but the Working Groups themselves will be asked to consider this question further.
- Task 4: *Contribute to the Annual Science Conference.* The Committee already has a routine Theme Session (North Atlantic Processes), and regularly promotes Theme Sessions suggested by the Working Groups. In this way Theme Sessions are well attended and effective. This will be encouraged further in the future. While some members suggested that specific projects, such as GLOBEC, might stimulate lively Theme Sessions, other members considered that more generic /

process-orientated themes would be more suited if ongoing Theme Sessions are required.

Future of ICES/GLOBEC Office

The Committee considered that, should Council decide to continue the ICES/GLOBEC Office, a Group should be established to oversee the Office.

Reports from Working Groups

For the second year Working Group Reports were peer-reviewed. While this process was recommended by the Consultative Committee for all Science Committees, it is still only this Committee which carries this out. The Committee considers that this is a useful exercise, leading towards improved quality of Working Group work and reports. Although some reviews may be viewed as being rather critical, their intention is to be constructive, leading to better reports, better conclusions and hence better advice. It was hoped that the process of Working Group Report review would be continued.

Working Group on Shelf Seas Oceanography

The review of this Group raised some issues of concern. Its work is perhaps the most sought after by other Working Groups, such as Zooplankton Ecology and Phytoplankton Ecology, with the ICES/IOC Working Group on Harmful Algal Bloom Dynamics in particular having potential need for input from this Group. However, it was not clear whether the small attendance at its meetings included sufficient breadth of expertise to address these potential links, or the Group's existing Terms of Reference. A member of the Group explained its history, and noted that planning work was difficult when attendance at each meeting was uncertain and varied. Intersessional work did not take place. While many Groups could benefit from the advice of physical oceanographers who might attend this Working Group, at present these scientists do not see any benefit to be gained by attending. Clearly there is a need for a fresh direction in order to attract high quality physical oceanographers, who could then be drawn upon to provide much needed advice. The Committee should be providing this fresh steer.

In the general discussion which followed, it was noted that direction from the Committee was also lacking in the work of other Groups, particularly Groups whose output does not have a bearing on core ICES advice, and who are self-motivated by national concerns. Concern over membership was a common issue amongst Chairs, and it was noted that Delegates should ensure that nationally nominated members are active, and membership lists are examined in order to streamline them, and ensure they are current. It was noted that the Working Group on Cod and Climate Change attempts to invite key experts for particular Terms of Reference.

It was questioned whether the Working Group structure should reflect customer needs rather than generic science areas. One way forward for this Working Group might be to re-focus on shelf seas modelling. Two options for the group presented were to go ahead and meet under the new Chair as planned, or to work next year by correspondence. A sub-group, chaired by M. Heath, was then tasked to review the Working Group before the second session of the Committee and suggest the best way forward for this group. The sub-group stated the following:

“The sub-group was convened in response to uncertainty in the Committee as to what to do with the Working Group on Shelf Seas Oceanography which was perceived as failing to meet its objectives. There was also a perception that the discipline-based structure needs reviewing and rationalising to conform to the ICES Strategic Plan.

The majority of the Terms of Reference of the disciplinary Working Groups of the Committee are self-generated, and yet many of the groups are struggling to achieve participation by the registered membership, either in intersessional work or at meetings. This must imply that the Terms of References are not perceived to be relevant to the majority of members, or that they do not attract a high enough priority in the member nations, and/or the format of the groups is not attractive to the relevant experts. Attendance is entirely at institutional expense, so institutes and researchers on limited budgets must judge whether the benefits of attending justify the expense. The Working Groups which are succeeding in attracting participants are those with strong multi-disciplinary or issues-based focus – e.g. the Working Groups on Harmful Algal Bloom Dynamics and on Cod and Climate Change.

This situation is in marked contrast to, for example, the Living Resource Committees Working Groups which deal with very applied issues and have specific objectives, or the ACFM Assessment Groups which carry out the annual fish stock assessments. These are well attended, and the difference must be that the Living Resource and Stock Assessment Groups have clear products to deliver, and the member nations have a clear vested interest in the quality and content of those products. Many of these Groups also have self-generated scientific objectives, but their main role is to produce the ‘nuts and bolts’ of ACFM advice to management organisations.

The disciplinary Groups of the Committee cover a spectrum of activities, ranging from the furthering of purely disciplinary science issues, through to the production of deliverables requested by ACME and/or ACFM. In-between, are activities undertaken at the initiative of Group members with the aim of developing applied applications for their science and promoting the utility of potential products of their disciplinary

Working Group for the advice-giving functions of ICES. The Committee has not in the past exerted much/any steer as to the direction of the disciplinary Working Groups.

In general, requests to the Working Groups from the ICES Committee structure for specific deliverables have been rare. In general also, when such requests have been received the disciplinary Groups have been either unwilling or unable, due to lack of appropriate participation, to respond adequately. Requests for deliverables come with no attached budget, so unless the Member Countries of ICES are willing to commit human and other necessary resources, then the job cannot be accomplished. Despite drawing attention to this problem in 1998 and 1999, the Committee has not been able to resolve this problem.

Overall, it appears that a rather fundamental realignment of both the role of the Committee and the structure of the Working Groups is required. The objective would be to make the system deal more effectively with specific requests for information or products, and develop a science base which integrates the disciplines in line with the ICES strategy and provides the pool of expertise which needs to be deployed to address specific requests.

Proposal for a short-term solution to the Working Group on Shelf Seas Oceanography issue:

Regarding the particular fate of the Working Group on Shelf Seas Oceanography, it is suggested that it is unrealistic to expect the Group to work by correspondence on the given Terms of Reference. Accepting this solution is effectively abolition. The alternative is to abandon their Terms of Reference and attach them to another Working Group which particularly needs their services (e.g. the Working Group on Harmful Algal Bloom Dynamics). This is the preferred option, and one which might be a stepping-stone to the more fundamental re-structuring outlined below.”

The Committee thereafter agreed that the Working Group should terminate and a new Study Group be formed, focussing on coastal modelling. The Study Group will be encouraged to seek links with the Working Group on Harmful Algal Bloom Dynamics in particular. The Chair-nominee of the Working Group (F. Saucier, Canada) has agreed to form the Study Group and to set its agenda. The Terms of Reference will initially be restricted to a review of advances and capabilities of coastal models, and to the discussion of a strategy to develop models and measurements in order to forecast algal bloom development. It was noted that this Term of Reference would be relevant to the focus in GEOHAB on modelling and prediction. A sub-group was nominated to draft the Terms of Reference of this new Study Group.

Working Group on Phytoplankton Ecology

The reviewers noted that they were presented with an incomplete report to review, which made the process difficult. Again the reviewers had serious concerns about this Working Group and its report. Terms of Reference were not clearly addressed, there was little inter-sessional work, and attendance was low. It was questioned, given the very active Working Group on Harmful Algal Bloom Dynamics, whether there was a need for this Group. In the discussion that followed it was noted that this Group has a different focus than the other plankton Working Groups, and care should be taken if any mergers were to be considered. The Working Group on Harmful Algal Bloom Dynamics is an ICES/IOC WG and hence its structure cannot be altered without consultation. A possible merger with the Working Group on Zooplankton Ecology was also discussed. It was decided to ask the Working Group Chair to discuss its possible future with the Chairs of the other relevant Working Groups, and with the members of the Working Group itself.

ICES/IOC Working Group on Harmful Algal Bloom Dynamics

The reviewers were very positive about the Working Group and its report. The Working Group has a growing list of Terms of Reference, and it was suggested that, for clarity, these might be arranged into categories such as Scientific, Technical, and Logistic. The Working Group is an excellent example of a multi-disciplinary Working Group. The Chair of the Working Group welcomed the constructive comments from the reviewers. It was noted that while this is an ICES/IOC Group, there is little participation from outside of the ICES area. A Term of Reference relating to examining the potential impact of climate change was queried, as it was thought the underlying processes behind harmful algal bloom dynamics were not yet well understood. After it was noted that an additional Term of Reference has been set for this Working Group by ACME, the report was accepted.

Working Group on Marine Data Management

The reviewers had some concerns about this report. They considered that the Terms of Reference had not been adequately addressed, and that the report itself was too full of unexplained technical terms, and lacked clarity. The Chair of the Working Group, R. Gelfeld, welcomed the comments of the reviewers, and discussed them in some detail. Again active membership of the Working Group was examined, and Delegates again asked to ensure national nominations are current and active. After noting that the review would be used to improve the report next year, this year's report was accepted.

Working Group on Seabird Ecology

The review of this report was very positive. The Group had a productive meeting, and the report reflected this. There was some concern about the limited membership and, as noted earlier, the Chair, M. Tasker, considered it important for Member Countries to clarify who attends the meeting.

Working Group on Oceanic Hydrography

This review was also very positive. The Working Group produces the ICES Annual Ocean Climate Status Summary (IAOCSS) as one of its main tasks, and this was achieved. Some points of detail were raised, such as confusion in the report over some geographical terms, and the membership of the group, and the Chair, W. Turrell, agreed that these would be dealt with next year. New members had been identified and would be encouraged to join the Working Group. When the Term of Reference relating to data archaeology was discussed a member of the Working Group noted that institutes should endeavour to make available older data sets which reside on paper, and not in national data centres. It was also noted that rather than reviewing the work of the Steering Group on GOOS, the Group should actively consider how its work might enhance ICES' interaction with GOOS. The resolution concerning making the 2001 IAOCSS a *Cooperative Research Report* was discussed. It was noted that while this was not yet prepared, the Council should consider it now to avoid delays in its production.

Working Group on Zooplankton Ecology

The Chair expressed his appreciation of the Working Group and the editorial group led by R. Harris for preparation of the Zooplankton Manual. It is a product that the Working Group should be very proud of.

The reviewers noted the extremely vigorous, energetic, and productive nature of this Group, but had some concerns that the report itself did not reflect this completely. The Chair, L. Valdés, noted the reviewers' comments, and analysed each point in some detail. He felt that the review had positive benefits, as it had stimulated the re-analysis of the evolution of the Working Group, and the nature of the report. The purpose of Working Group Reports was discussed. It has the role of both a record of the discussions, and as a concise summary of a scientific issue which could stand alone and underpin advice from the Advisory Committees. The nature of the report varies with the nature of each Term of Reference. An instructive assessment of the Working Group structure was presented by the Chair (L. Valdés). He noted that while multi-disciplinary Working Groups were needed to address questions posed to the Committee, and present examples were the Working Group on Cod and Climate Change and the Working Group on Harmful Algal Bloom Dynamics, there remains a need for a core of

single discipline, science-orientated Working Groups. This core attracts quality scientists who appreciate the interaction between their peer groups at each Working Group. Once convened, ICES can draw upon the collected expertise to provide input and advice to the more task-orientated, multi-disciplinary Working Groups. This structure must be recognised and built upon, as new tasks are presented to the Committee. The Chair concluded by noting the vigour of this Working Group, and that the 2001 report will be able to take into account some of the reviewers' comments regarding the report itself.

In the discussions that followed, it was suggested that if a Working Group report builds upon previous work of the Working Group, this should be explicitly acknowledged through references to previous documents in order that members in the future can trace the Working Group activities. It was also questioned whether there were guidelines for the structure of Working Group reports, and that such guidelines would be useful. Every Working Group should also remind itself of its original remit when convening, to ensure it remains focussed on its key issues. In terms of ICES and GOOS, it was noted that the work of the Group had been particularly cited as producing a useful product. Two further points were noted for the attention of the Working Group; the G5 data protocol, and the need for Ecological Quality Objectives that the Working Group might help formulate. The report and Terms of Reference were accepted, and the Draft Resolution requesting a joint IOC/PICES/GLOBEC Symposium in 2003 was supported. It was also noted that the proposal for this Symposium would be discussed at the forthcoming PICES Annual Meeting.

Working Group on Recruitment Processes

The reviewers found the report informative and clear, reflecting the high scientific content of the Working Group work, and noted that the report included useful recommendations. One ongoing activity of this Working Group should be to inform the stock assessment advisory process within ICES of developments in recruitment process studies. The Chair, P. Pepin, noted and appreciated the reviewers' comments. The Term of Reference referring to data products had been discussed, but the report had been kept brief and did not include details of the discussion. It was noted that while there were good, short-term studies of recruitment processes, there was a general lack of long-term recruitment data in the ICES area. Once again the problem of Working Group membership was raised, and the previous comments regarding this issue were reiterated and emphasised. The report and Terms of Reference were accepted.

Study Group on the Incorporation of Process Information into Stock-Recruitment Models

It was noted that some difficulties had been encountered in the organisation of the Study Group. However, once

convened the first meeting was extremely productive. The comment of the reviewers concerning the limited membership of the Group in terms of national representation was also noted, and it was agreed that this was due to the short interval allowed for the organisation of the meeting. Because of the developments within the Study Group, and the need to conclude these with an enhanced membership, the Study Group requested a second meeting. This was agreed by the Committee, which accepted the report.

Working Group on Cod and Climate Change

The reviewers found the report very informative, but missed a summary of conclusions. The Chair noted the reviewers' comments, and explained that the Working Group had withheld publication of the Working Group results until all inputs had been received and evaluated. Now that this was available, it was recommended that a *Cooperative Research Report* is produced summarising the results. The ensuing discussions recommended that the Group pursue possible links with other relevant Working Groups both within and outside of the Committee. Funding has been secured from the International GLOBEC Committee in order to allow travel by members of the Working Group in preparation of further publication of results, although support was still needed for secretarial services and data analysis. The recommendation for a Symposium in 2004 on the influence of climate on North Atlantic fisheries was noted. The meeting suggested that the term 'fisheries' be replaced by 'fish stocks' in order to allow a wider input to the meeting. It was also noted that there was an ICES Theme Session planned for the 2002 ASC on a related issue, which might provide input to the Symposium.

ICES/GLOBEC Workshop on the Dynamics of the Growth of Cod

The reviewers found the report of this workshop informative and a good collection of recent information on the subject. The Chair of the Working Group on Cod and Climate Change noted that there was significant work prepared before the meeting took place. This allowed a significant report to be produced during the workshop itself.

General discussion

In the general discussion after all the reviews, the second issue raised by the sub-group was discussed: the proposal for fundamental restructuring:

"It is proposed to phase out the existing disciplinary Working Groups and replace them with two new types of groups:

a) Limited-life Task Groups convened to respond to particular requests for information, and b) ongoing Thematic Programmes.

a) Limited-life Task Groups

The proposed Task Groups would deal solely with specific requests for information or analyses passed down from the ICES Advisory Committees. The Committee needs to take responsibility for assessing such incoming requests, and determining the skills and resource implications of producing a response. To accomplish this it is essential that requests for information are communicated to the Committee Chair as soon as possible, and that the Committee is prepared to be on call throughout the year to respond by correspondence. The individual members of the Committee must also take responsibility, after negotiation with their own national Delegates and institutional administrations, for making the commitment of resources to populate the Task Groups with the necessary expertise. It cannot just be left to serendipity to dictate the composition of the Task Groups.

b) Thematic Programmes

The aim of the Thematic Programmes would be to develop the theory and application of disciplinary science to the integrated assessment of marine environment. Participation in Thematic Programmes should be voluntary rather than commissioned. Three possible Thematic Programmes are suggested below:

- *Ecosystem structure and function,*
- *Climate change and its implications,*
- *Marine population dynamics and ecology.*

It is anticipated that the Thematic Programmes would report on significant scientific developments likely to result in improvements in ICES advice, convene limited-life Study Groups to address particular disciplinary issues, and organise symposia or other events to promote scientific discussion. The Committee would be responsible for steering the Programmes to direct their attention at the broad issues of concern to ACFM, ACME, and ACE, and feed the findings back to these Advisory Committees.

Transition to the proposed new system

It seems clear that considerable thought and planning will be required to achieve a successful metamorphosis of the existing system into the proposed Task Group and Thematic Programme structure outlined above. To facilitate this it is proposed that the Chairs of the existing Working Groups and the Chair and members of the Committee should work intersessionally to discuss in detail the composition and themes of the new structure, taking into account views expressed by the existing Working Group membership, and table a set of detailed proposals at the 2001 Annual Science Conference”.

The opinion of the Committee was that the sub-groups document provided a comprehensive review of all of the Working Groups, their structure and interaction. There followed a wide-ranging discussion on the purpose, structure and membership of the Working Groups. There was a divergence of views, between those who wished them to be multi-disciplinary, task-orientated, and short-lived, and those who wanted to retain a core of single-discipline science-orientated Working Groups to underpin the multi-disciplinary tasks. It was agreed that, under the leadership of the Committee Chair, Working Group Chairs and relevant members of the Committee should work intersessionally by correspondence and would meet prior to the 2001 ASC to take these discussions further, after consulting with all Working Group members during 2000/2001. This sub-group document would be the basis of discussions. The Committee will discuss the outcome of this process at next years meeting.

Proposals for Theme Sessions and Mini-Symposia 2001 and 2002

The Committee proposed a routine Theme Session on “North Atlantic Processes”. The nature and purpose of this Session was discussed. It was agreed that it should continue, with the Chairs tasked with the job of adding a focus each year. In 2001 this will be transport processes in the North Atlantic. “Transport in relation to the thermohaline circulation and to bio-physical processes” will be included as sub-topics.

A Theme Session on “Growth and Condition in Gadoid Stocks and Implications for Sustainable Management” was also agreed for 2001.

For 2002 a Theme Session on Environmental Influences on Trophic Interactions was proposed.

Election of new Working Group Chairs

F. Saucier (Canada) was elected as Chair of the new Study Group on Modelling of Physical/Biological Interaction (SGPBI), and R.D.M. Nash (UK) was elected as a Co-Chair of the Working Group on Recruitment Processes. The Co-Chairs will work together for 1 year in order to allow continuity.

Election of Committee Chair

F. Colijn (Germany) was elected Chair of the Oceanography Committee for the next three years.

Any Other Business

- i) In the Chair’s report from the meeting between him, seven Working Group Chairs, two representatives from other Working Groups, the Oceanographer, and the GLOBEC Coordinator, the minutes from that meeting stated the following:

“Last year the Chair instructed the Working Groups to examine the Terms of Reference of the other Working Groups as a means of identifying common interests and potential co-operation. He began the meeting by asking if the Chairs felt this was worthwhile. Most felt it was, although the response had varied from long discussions (Zooplankton Ecology) to none (Seabird Ecology). Several Chairs felt that, having identified possible overlapping interest, there needed to be some interessional contact and work, but acknowledged the difficulty given the large workloads that the Working Group scientists already have. It was decided that at next year’s Statutory Meeting the examination of the Terms of References would be undertaken at the Working Group Chairs meeting in order to identify possible cooperative work.

The report peer-review process was discussed with agreement that it promoted a better report. Given the more critical nature of the reviews this year, some Chairs requested earlier delivery of reviews in order that their Working Group could respond. The Committee Chair noted that he did not send any of the reports out for review until most were in, and some were received very late. He mentioned the difficulty of obtaining reviewers, which lead to the expressed frustration that Delegates need to ensure that their appointed Committee Members are active and willing to work. There is also the difficulty of the main reviewer obtaining the secondary reviews in time. The Chair stated that next year the reports need to be in on time but could be sent out for review before all are in, if some are very late. The reviews could then be provided to the Working Group Chairs earlier. It was decided that the reviews will continue and suggested that reviewers for next year’s reports be identified at Friday’s meeting. In order to maintain a record of the reviews, next year it was proposed that they are published as a C document together with the WG’s response, the executive summaries. It was further proposed that this year’s reviews be posted on the web. Both of these proposals will be brought to the full Committee on Friday.

The Ocean Climate Status was discussed. This will go beyond physical oceanography and include zooplankton conditions as well. Discussion centered on whether this should be published as an

ICES Cooperative Research Report (CRR) or whether a new series should be started. It was felt that the purpose and target audience of such a publication should be considered and that it should also include information on fisheries”.

- ii) It was mentioned that some of the reviews presented at WG meetings should be published. It was recommended that some might be published as a *Cooperative Research Report*. It was also suggested that material could be posted on the web. The Chair indicated that improvements of the ICES website were badly needed. ICES Secretariat acknowledged the problem.

The Committee discussed whether Committee reviews should appear as a C document during each ASC. Some thought this constructive, while others questioned the audience and use for such a document. The timing of the review process was also discussed, in relation to Chairs being able to act upon the review. It was concluded that reviews from one year would appear as an appendix in the following years Working Group report, to enable the tracing of progress within the Working Group and to ensure that the Working Group discusses the review, and uses it to improve its report each year.

The planned 2002 inter-Working Group Meeting was mentioned. It was agreed to await the outcome of the 2000/2001 discussion with respect to the Working Group structure before a decision is taken with regard to a joint Working Group meeting in 2002.

- iii) The Chair of the Working Group on Marine Data Management presented the “Data Management Guidelines” prepared by his Working Group. These were briefly discussed. The guidelines are available from their web page and each Working Group and Committee Member was asked to consider them further and report back any comments directly to the Working Group Chair.

Closing

The Chair thanked all Members of the Committee and Working Group Chairs for their support during the last three years, and particularly thanked H.D. Dooley (Oceanographer).

Documents

C:01 Ref. D	Study Group on Incorporation of Process Information into Stock-Recruitment Models (SGPRISM)
C:02 Ref ACME, B, D, E, F, G, H	ICES/IOC Steering Group on GOOS (SGGOOS)

C:03 Ref. G	Working Group on Recruitment Processes (WGRP)
C:04 Ref. ACME, E	Working Group on Seabird Ecology (WGSE)
C:05 Ref. ACME	Working Group on Shelf Seas Oceanography (WGSSO)
C:06 Ref. ACME, E	ICES/IOC Working Group on Harmful Algal Bloom Dynamics (WGHABD)
C:07 Ref. ACME, E	Working Group on Oceanic Hydrography (WGOH)
C:08	Working Group on Marine Data Management (WGMDM)
C:09 Ref. ACME	Working Group on Zooplankton Ecology (WGZE)
C:10 Ref. ACME	Working Group on Phytoplankton Ecology (WGPE)
C:11 Ref. G	ICES/GLOBEC Working Group on Cod and Climate Change (WGCCC)
C:12 Ref. ACFM	Workshop on the Dynamics of Growth in Cod (WKDGC)
C:13	Study Group on an ICES/IOC Checklist of Phytoplankton (SGPHYT)

REFERENCE PAPERS: E:01, ACME:03, ACME:04, ACME:05, and ACME:09

RESOURCE MANAGEMENT COMMITTEE (D)

Chair: R.L. Stephenson (Canada)

Rapporteur: C.M. O'Brien (UK)

The Resource Management Committee met on Monday 25 September from 09.30–13.45 (23 present) and on Friday 29 September from 13.30–18.00 (32 present).

The Chair opened the meeting, welcomed the participants and appointed Carl O'Brien as Rapporteur. The Chair presented the agenda and a short verbal report focusing on the Committee's activities; pointing out that the Committee had not been as active intersessionally as intended. The issue of the restricted number of Committee members attending the first session, in comparison to last year's attendance figure, was raised. The timing of the Committee meeting and its separation by two days from the start of the ASC was mooted as a possible explanation.

The discussions focused on five issues:

- Survey reports. The treatment of reports from research surveys for which ICES Member Countries are involved should be improved. At present there is no appropriate mechanism to review the reports and the activities are separated between this Committee and the Living Resources Committee. It was recommended that surveys should be co-ordinated within a single Committee, or that there at least be co-ordinated treatment of survey-related Working Group's by the two Committees. The idea of a regular session at the ASC with a rotational treatment of surveys was suggested.
- ICES Strategic Plan. The Chair presented an overview of this Plan for information to members of the Committee. The Plan had been used by the Consultative Committee to compile a draft Work Plan. Considerable time was devoted to the discussion of the Work Plan. The five areas previously identified were considered still to be relevant to the Committee's work. A sub-group (C. O'Brien, UK; M. Pastoors, Netherlands; C. Hammer, Germany) was formed to consider how best to develop a future plan of work. Their draft proposal was discussed and a decision taken to use it as the basis for inter-sessional work co-ordinated by the Chair.
- Review of reports. It was the consensus of the Committee that there is a need for a more formal mechanism for processing these reports and that a procedure would be implemented for the coming year.
- Ecosystem effects of fishing activities. Doc. ACME:02 was presented by J. Rice for information. Specifically, sections 3 (Review of Ecosystem Models), 6 (Bottom Trawl Impacts on Benthos) and 7 (Ecosystem Management Objectives) are of

relevance to the Committee with the latter suggesting a possible framework for the future.

- Topic groups. The need for the creation of these was raised by the Chair and discussed by the Committee, but it was felt that the existing ICES structure consisting of Study Groups, Working Groups, Workshops, Theme Sessions and Symposia was adequate for the time being. There is, however, a need for the Committee to be more pro-active in proposing activities spanning the whole spectrum of the Committee's remit and workplan.

Reports of Working Groups

The report of the Study Group on Market Sampling Methodology (Doc. D:01) was presented by M. Pastoors. Terms of References had not been fully addressed as neither analysis on variability of sample data nor analysis of adequate levels of sampling were addressed but referred to the Workshop on International Analysis of Market Sampling and the Evaluation of Raising Procedures and Data-Storage (software) later in the year. The work of the Study Group is linked to initiatives within the EU through the projects EMAS, SAMFISH and FIEFA. The Committee recommended that ICES investigate taking the lead in the co-ordination of data from national market sampling programmes. Furthermore, the Committee suggested that ICES should devote more time to investigating both the quantity of sampling and the procedures of sampling. Questions directed at the optimal sampling practice – e.g. port-based versus area based – need to be addressed.

The report of the Working Group on Fishery Systems (Doc. D:02) presented by P. Degnbol. He explained that participation in the first meeting had not been as broad as hoped when setting-up the Group, and comprised twelve biologists and two social scientists. The difficulty in attracting economists and social scientists to participate in ICES' activities was highlighted. This was due in part to the lack of financial funding for University scientists, and the Group identified a need to develop a funding proposal under the EU 5th Framework Programme to allow wider participation from University Departments. Three case studies were identified and a timetable of work proposed for the next four years. It was suggested that managers should review the reports to ensure wide dissemination of the Group's work.

The report of the Planning Group on Surveys on Pelagic Fish in the Norwegian Sea (Doc. D:03), was presented by C. Hammer. EU finance has provided support for these surveys, but this source of funding will cease in one year. This may affect the future viability of the surveys and is a cause for concern

The report of the International Bottom Trawl Survey Working Group (Doc. D:07), was presented by H. Heessen. With the support of funding from the EU, the Working Group has developed and co-ordinated the surveys in southern and western areas. Concern was expressed about future surveys in these areas once EU funding ceases.

The following three groups are scheduled to meet later in 2000. Their reports will be presented at next year's Statutory Meeting.

D:04 Workshop on Synthesis of Surveys on Pelagic Fish in the Norwegian Sea and Adjacent Areas.

D:05 Workshop on International Analysis of Market Sampling and the Evaluation of Raising Procedures and Data-Storage (software).

D:06 Study Group to Evaluate the Effects of Multispecies Interactions.

Draft Resolutions

Draft Resolutions were put forward for the following Working/Study Groups:

- International Bottom Trawl Survey Working Group
- Working Group on Surveys on Pelagic Fish in the Norwegian Sea
- Working Group on Fishery Systems
- Methods Working Group
- Courses in Fish Stock Assessment Techniques
- Workshop on FLEKSIBEST
- Study Group on Redfish Stocks

The Committee made note of the following topics whose parent Committee is not the Resource Management Committee, but whose terms of reference, nonetheless, have a bearing on the work of the Committee:

- Working Group on Ecosystem Effects of Fishing Activities
- Study Group on the Incorporation of Process Information into Stock-Recruitment Models
- Study Group on the Further Development of the Precautionary Approach
- Study Group on Ecosystem Assessment and Monitoring

The Committee suggested the following Theme Sessions:

- The Scope and Effectiveness of Stock Recovery Plans in Fisheries Management (2001/2002 ASC)
- Quality and Precision of Basic Data Underlying Fish Stock Assessment and Implications for Fisheries Management (2001 ASC)
- Use and Information Content of Ecosystem Metrics and Reference Points (2001 ASC)
- Multi-Disciplinary Approach of the By-Catch and Discard Problem (2002 ASC)
- Sustainable Development and Conservation of Natural Resources of Coastal Zone (2002 ASC)
- Case Studies in the Analysis of Fisheries Systems Management (2002 ASC)
- Application of Mark-Recapture Experiments to Stock Assessment (2002 ASC)
- Unaccounted Mortality in Fisheries (2002 ASC).

The Committee supported the idea of the Theme Session:

- Impact of Fish Behaviour on Management

but suggested further development of the objective and justification.

The Committee supported the suggestion of the following Symposium for 2003:

- The Precautionary Approach to Fisheries Management: Lessons Learned and Future Directions.

The Committee discussed the issue of problems of medium-term forecasts, arising from Theme Session V (Medium-Term Forecasts in Decision-Making), and suggested they be conveyed to ACFM.

Election of new chair

Two nominations for the Chair were received (J.-J. Maguire, Canada; C.M. O'Brien, UK), and J.-J. Maguire was duly elected to serve as Committee Chair for the next three years.¹

¹ J.-J. Maguire later withdrew. C.M. O'Brien was installed as interim Chair.

Documents

D:01 Ref. ACFM	Study Group on Market Sampling Methodology (SGMSM)
D:02	Working Group on Fishery Systems (WGFS)
D:03 Ref. ACFM	Planning Group on Surveys on Pelagic Fish in the Norwegian Sea (PGSPFN)
D:04	Workshop on Synthesis of Surveys on Pelagic Fish in the Norwegian Sea and Adjacent Areas (WKSSPF) (to ASC 2001)
D:05 Ref. ACFM	Workshop on International Analysis of Market Sampling and the Evaluation of Raising Procedures and Data-Storage (software) (WKIMS) (to ASC 2001)
D:06 Ref. ACFM, G	Study Group to Evaluate the Effects of Multispecies Interactions (SGEEMI) (to ASC 2001)
D:07 Ref. ACFM, G	International Bottom Trawl Survey Working Group (IBTSWG)

REFERENCE PAPERS: C:01, C:02, G:01, G:02, G:03, H:02, ACFM:11, ACME:02

MARINE HABITAT COMMITTEE (E)

Chair: A. Jarre (Denmark)

Rapporteurs: S. Carlberg (Sweden), A. Rijnsdorp (Netherlands) and P. Keizer (Canada)

The Marine Habitat Committee met on Monday, 25 September 2000, from 0930 –1800 hours, and on Friday, 29 September from 1330-1800 hours. The Chair opened the meeting at 0935 hours on Monday 25 September. All sessions were well attended, with about 25 participants on Monday, and more than 30 on Friday 29 September. P. Keizer (Canada) was elected Chair of the Committee for the next three years.

State of the ICES strategic planning process

The Chair informed the Committee that the general concepts of the Strategic Plan have been presented in a glossy brochure and distributed to Delegates. These general aspects of the Strategic Plan would be presented and further discussed at the Open Forum to which Committee members may attend.

The Chair then reported that the Work Plan as proposed by the Committee had been discussed by the Consultative Committee. In order to have a consistent form for presentation from all Committees, the Committee proposal had been edited by the Chair of the Consultative Committee. Some Committee members expressed the view that the amended terms of the Work Plan were too general.

The Chair further informed that, following work during the past 5–7 years in various Bureau Working Groups, the Delegates now would discuss and eventually decide on a proposal to revise the ICES Advisory system by forming a new Advisory Committee on Ecosystems (ACE). In the discussion that followed, it was pointed out that this proposal would risk splitting rather than integrating between the different aspects in the ICES advice. Members were urged to convey their opinions to their national Delegates.

Peer review of Working Group reports

A first review was made of the numerous Working Groups with regard to the presence of Working Group Chairs, report reviewers, and availability of the reports on the web and in printed form. Despite some problems encountered with the availability of Working/Study Group reports on the ICES Website, all reports of the Working Groups reporting directly to the Committee, and almost all reports of the Working Groups referencing their reports to the Committee, were reviewed during the meeting. It was agreed that all reviewers should provide their reports of this year's work (as presented at the Committee meeting) by e-mail to the Chair not later than two weeks after the ASC, so that the reviews of this year's work can be collated and circulated.

The Committee had this year used a rather free format in its peer review process, following the discussions at its meeting in 1999. The focus of the review should be on the contents, the scientific direction, and the link to the science programme of the Committee. However, it turned out that the format of the reviews was largely consistent with that used by the Oceanography Committee. For the future peer-review process, the template used by the Oceanography Committee was adopted for use in a slightly amended form that will ensure attention to the link to the ICES Science Programme and other Working Groups.

The Committee agreed that it would be useful to spend more time at the Committee meeting on strategic discussions. As it is desirable, but unlikely, that there will be more time available for the Committee to physically meet, it was accepted that this would imply more efficient intersessional work. Consequently, it was agreed that (i) a term of reference would be included for Working/Study Groups to send their reports to the Secretariat by the designated deadline, as severe problems with availability to the Secretariat had been encountered, with some groups sending in their reports very late and/or incomplete; (ii) the Secretariat will make the reports available on the Website immediately after having received them; (iii) access to draft reports will require a password; (iv) the reviews will be circulated among Committee members and Working/Study Group Chairs before the Committee meeting (but not be published); and (v) the set of Draft Resolutions would be circulated to Committee members in due time before the Committee meeting.

Research highlights from Working and Study Groups

The following three items were suggested and agreed as research highlights of the Committee's Working Groups:

- The collaborative study of members of the Working Group on the Statistical Aspects of Environmental Monitoring and the Working Group on Working Group on Pathology and Diseases of Marine Organisms (parented by the Mariculture Committee), to link fish disease prevalence to environmental factors, including the distribution of contaminants.
- The Marine Chemistry Working Group's review of new information on *tris* (4-chlorophenyl) menthanol (TCPM) and *tris* (4-chlorophenyl)methane (TCPMe) in fish and marine mammals from eastern Canada as well as an inter-laboratory study of these substances.
- The work by the members of the Working Group on Biological Effects of Contaminants on the impact of

the season of the year on biomarker results, carried out in co-operation with the Working Group on Statistical Aspects of Environmental Monitoring.

Working/Study Group issues

The Committee supported the suggestion that the Working Group on Marine Mammal Habitats, parented by this Committee, and the Working Group on Marine Mammal Population Dynamics and Trophic Interactions, parented by the Living Resources Committee should be merged into a new Working Group on Marine Mammal Population Dynamics and Habitats (WGMMPH). In order to make the point that the ICES community does not primarily regard marine mammals as a living resource, it was proposed that the combined group be linked to this Committee.¹

The Working Group nominations of R. Law (UK) for new Chair of the Marine Chemistry Working Group and K. Hylland (Norway) as new Chair of the Working Group on the Biological Effects of Contaminants were confirmed. The Committee also gratefully welcomed the willingness of S. Rowlatt (UK) to chair the meeting of the Working Group on Marine Sediments in 2001, at which a new Chair should be identified. The Committee confirmed E. Jagtman (Netherlands) as Chair of the Working Group on Marine Habitat Mapping, and A. Bjørge (Norway) as Chair of the Working Group on Marine Mammal Population Dynamics and Habitats.

It was noted that several Working Groups have only a small number of active members, and this impacts their ability to fulfil their terms of reference. In the past year, this problem has been particularly visible in the Steering Groups on Quality Assurance Procedures, but also in the Working Group on Statistical Aspects of Environmental Monitoring. Members were urged to bring this problem to the attention of their Delegates and their colleagues in their home countries.

A scientific theme that emerged from various Working Groups is the necessity to develop criteria to assess when environmental effects (or changes) become significant.

Scientific progress at the 2000 ASC

The three Theme Sessions that had already taken place or were in progress were each summarised by one of the co-conveners. In addition, Dr D. Connor (UK) reported on the OSPAR/ICES/EEA Second Workshop on Marine Habitat Classification that had taken place in the week immediately preceding the ICES ASC; Dr Connor served as co-convenor of this Workshop. The following paragraphs include the discussion of these presentations by members of the Marine Habitat Committee.

Habitat mapping and classification

This Theme Session was in progress at the time of the Committee meeting, with about 80 attendees. Habitat classification, and subsequent mapping, are important tools for ecosystem-based management, and protection of marine biodiversity. While agreement is being reached on the classification system, major difficulties have been encountered in accessing and combining data for habitat mapping from different countries. The need for data standards will be a focus at the Workshop on Deep-Seabed Survey Technologies in Bergen in January 2001. The technological developments for mapping are occurring rapidly, but the development from the biological side is lagging behind. There is a need for a clear definition of the goals of surveys to determine the appropriate technology and analytical methods. In developing criteria for the identification of critical habitats that need protection, the link between ICES and OSPAR needs to be improved.

The role of ICES in supporting biodiversity conservation

This Mini-Symposium was well attended and the presentations were of high quality. It was emphasised that good taxonomic knowledge underlies all biodiversity-related work, but its present applicability is deficient, and the skill has almost been lost. Member Countries need to give attention to this severe problem, by maintaining or creating positions, and joining in networks across governmental institutes, universities, and museums. The advice given at present on conservation of biodiversity below the level of species/stocks is insufficient for the preservation of genetic diversity. ICES has been too silent in the discussion of species at risk. Paleo-marine scientists can aid in the attempts to construct unperturbed systems, in order to understand the role of biodiversity in ecosystem structure and functioning. It was proposed to discuss objectives for ecosystem-based management at both workshops and theme sessions, in order to ensure the participation of the full community of marine scientists.

Spatial and temporal trends of contaminants

The session received adequate attention, although a better link with fisheries scientists is still desirable. The main conclusion was that the effects of contaminants are real and in some cases demonstrable at the population level. There is a clear relationship between environment and contaminants and the prevalence of fish disease. The need was emphasised to use multiple techniques in field studies in order to maximise the cost-effectiveness of this work, and to use adequately complex tools for data analysis. There is a need to find a way of advancing the science of the effects of contaminants, e.g., through modelling.

¹ Delegates later decided that this Working Group should be parented by the Advisory Committee on Ecosystems.

Theme Session proposals

The Committee suggests the following Theme Sessions for 2001:

- 1) Sustainable Development and Conservation of Natural Resources in the Coastal Zone, Co-conveners: P. Degnbol (Denmark) and J. Støttrup (Denmark);
- 2) The Use and Information Content of Ecosystem Metrics and Reference Points, Co-conveners R. Lanfers (Netherlands) and J. Rice (Canada);
- 3) Eutrophication, for Better or for Worse: Can we control it? Co-conveners L. Føyn (Norway) and E. Andrzejewicz (Poland).

The following preliminary titles for Theme Sessions for 2002 were supported:

- Integration of (acoustic) survey technologies and marine biological data, Co-conveners: E. Jagtman (Netherlands), J. Side (UK), and H. Rumohr (Germany)
- ICES/IOC Sea-going Workshop on Pelagic Biological Effects Methods—results and conclusions, Co-conveners: P. Matthiessen (UK), T. Lang (Germany), and K. Hylland (Norway).

Where will the Committee go from here?

The six strategic objectives of the Committee were reiterated by the Chair. In the subsequent discussion, it was noted that work on biodiversity issues was still weak, and the development of selection criteria, e.g., for Marine Protected Areas, species at risk, and critical habitats would be helpful. It was suggested to include this in the Work Plan to give more emphasis to human impacts other than fisheries and contaminants. Lastly, it was pointed out that science must not be confined to the ICES community alone, and better co-operation between scientists linked to ICES, OSPAR and also, e.g., the Mediterranean countries, would be desirable.

Close

The Chair pointed out that the Committee had achieved good integrative work during the past three years and thanked the Committee members, and Working and Study Groups for their input and efforts. The incoming Chair emphasised that he was looking forward to the support of the Committee in taking this work further. The Chair closed the meeting on 29 September at 17.50 hours.

Documents

E:01 Ref. ACME, C	Marine Chemistry Working Group (MCWG)
E:02 Ref. ACME	Working Group on the Marine Mammal Habitats (WGMMHA)
E:03 Ref. ACME	Working Group on Marine Sediments in Relation to Pollution (WGMS)
E:04 Ref. ACME	Working Group on Biological Effects of Contaminants (WGBEC)
E:05 Ref. ACME	Working Group on Statistical Aspects of Environmental Monitoring (WGSAM)
E:06 Ref. ACME	Study Group on Marine Habitat Mapping (SGMHM)
E:07 Ref. ACME	Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem (WGEXT)
E:08 Ref. ACME	Benthos Ecology Working Group (BEWG)
E:09 Ref. ACME	Study Group on Ecosystem Assessment and Monitoring (SGEAM)

REFERENCE PAPERS: C:02, C:04, C:06, C:07, F:01, F:02, G:05, G:12, G:13, ACME:02, ACME:03, ACME:04, ACME:05, ACME:07, ACME:08, ACME:09

MARICULTURE COMMITTEE (F)

Chair: A. Calabrese (USA)
Rapporteur: T. Sephton (Canada)

The Mariculture Committee met on Monday, 25 September from 1400 hrs – 1800 hrs and on Friday, 29 September from 1330 hrs – 1800 hrs. Thomas W. Sephton (Canada) was proposed as Rapporteur and accepted by the Committee.

The Chair reviewed the agenda for the two scheduled meetings of the Committee and the two Theme Sessions sponsored by the Committee: Sustainable Aquaculture Development (O) and New Trends in Fish Feeding in Aquaculture (P). Also, members were encouraged to attend the Open Forum being held on Tuesday, 26 September, where the ICES Strategic Plan will be presented and discussed in detail.

Committee Work Plan

A summary of the Committee's Work Plan was presented by the Chair and discussed briefly in light of the ICES Science Committee Work Plan and the overall ICES Strategic Plan. The basis of the Work Plan was taken from the Working Group submissions of their Terms of Reference and Scientific Justifications.

Working Group reports

It was noted that Working Group reports are due to be submitted to the ICES Secretariat shortly after the conclusion of the Working Group meeting. Consequently, it is important to finalise the meeting dates and venues of Working Group meetings with the submission of the annual Terms of Reference. The Mariculture Committee Chair was requested to ascertain the procedure for the approval of the release and publication of the Working Group reports on the ICES Website.

The Committee reviewed and noted the following discussion of the Working Group reports:

1. Working Group on the Application of Genetics in Fisheries and Mariculture. M. Møller Hansen, Chair, presented the report (Doc. F:03) of the Working Group. The Working Group was commended for supplying clear answers to the questions posed by the ACME with regard to salmon genetics in the Baltic. The Committee noted a lack of quantitative geneticists participating in Working Group as well as very few members working in aquaculture.
2. Working Group on Environmental Interactions of Mariculture. J. Doyle presented the report (Doc. F:02) on behalf of the Chair, I. Davies, who was unable to attend. The Working Group met in

Aberdeen, UK from 27 April – 2 May 2000. The Committee noted a lack of continuity in attendance at the Working Group's meetings, with three new members and no Baltic scientists. This precluded in-depth discussions of some agenda items.

3. Working Group on Marine Fish Culture. J. Castell, Chair, presented the draft report (Doc. F:04) of the Working Group. The Working Group met in St. Andrews, NB, Canada on 5–7 June 2000 (report in) and will work by correspondence in the coming year with a plan to meet again in 2002. The Working Group usually meets in late spring/early summer and noted that its reports are sometimes difficult to produce in time for the Statutory Meeting..

The Working Group and the Committee were requested to provide the reference to the ICES Standard Diets referred to in the report. Standards are not normally endorsed or proposed by ICES and it is important to maintain the historical references. The Committee was requested to ascertain the availability and use of the ICES Website as a link to the Working Group's Bibliographies and Nutrition databases.

4. Working Group on Pathology and Diseases of Marine Organisms. T. Lang presented the report (Doc. F:01) on behalf of Chair, S. Møllergaard. The ICES Secretariat was thanked for publishing the report complete with its colour photomicrographs. The Committee noted that the M74 Disease Theme Session that was held during the 1999 Annual Science Conference had been very well attended.

The Committee ratified the re-appointment of S. Møllergaard as Chair of WGPDMO for another three-year term.

5. Working Group on Introductions and Transfers of Marine Organisms. This Working Group reports to the ACME, however, its report (Doc. ACME:07) is referred to the Mariculture Committee. A. Calabrese presented the short report submitted by J. Carlton, Chair, and noted that this Working Group is sponsoring Theme Session U: Marine Biological Invasions—Retrospectives for the 20th Century and Prospectives for the 21st Century on Saturday, 30 September.

Approval of Working Group Terms of Reference

The Committee reviewed the Terms of Reference submitted for each Working Group based on directions

from the Consultative Committee that recommended that they avoid the unrestricted use of “review” items and reduce the number of items addressed on an annual basis by each Working Group.

General Comment:

It was noted that the Consultative Committee identified that all Working Groups should report by the designated deadline for the attention of the Mariculture Committee and, where appropriate, to the ACME.

Proposals for Theme Sessions for 2001 Annual Science Conference

There is a limited amount of time available for Theme Sessions at the ASC 2001 and subject areas should be consolidated. Also, there should be minimal overlap with other organisations and conferences to encourage participation and attendance. The Committee reviewed the justifications for the three proposed Theme Sessions:

1. Factors Affecting the Viability of Recirculation Systems for Commercial Production in Saltwater Aquaculture. Proposed Co-conveners: U. Waller (Germany) and A. Dosdat (France).
2. Diversification of Aquaculture. Proposed Co-conveners: N. Bromage (UK) and M. Shpigel (Israel).
3. Sustainable Development and Conservation of Natural Resources of the Coastal Zone. Proposed Co-conveners: J. Støttrup (Denmark) and P. Degnbol (Denmark).

Upon discussion and review, the Committee recommended the following for the 2001 ASC in order of their priority:

- Sustainable Development and Conservation of Natural Resources of the Coastal Zone. Proposed Co-conveners: J. Støttrup (Denmark) and P. Degnbol (Denmark).
- Land-Based Systems for Commercial Production in Saltwater Aquaculture with Emphasis on Recirculation and Integrated Systems. Proposed Co-

Documents

- F:01 Working Group on Pathology and Diseases of Marine Organisms (WGPDMO) Ref. ACFM + ACME + E
- F:02 Working Group on Environmental Interactions of Mariculture (WGEIM) Ref. ACME + E
- F:03 Working Group on the Application of Genetics in Fisheries and Mariculture (WGAGFM) Ref. ACME
- F:04 Working Group on Marine Fish Culture (WGMAFC)

REFERENCE PAPERS: C:02, ACME:07, ACME:08

conveners: U. Waller (Germany) and A. Dosdat (France).

Theme Sessions for 2002 ASC

Two Theme Sessions were proposed for the ASC 2002:

1. Improvements in Quality of Cultured Juvenile Fishes.
2. Use of Immunomodulators and Probiotics in Marine Fish Feeding.

Consideration of Workshops, Mini-Symposia and Symposia

Working Groups were requested to solicit ideas for the long-term planning of ICES. The Chair was requested to obtain a working definition for Workshops, Mini-Symposia and Symposia for the use of the Working Groups and the Committee.

Consultative Committee and ACME referrals

There were no referrals to consider at this time.

Mariculture Committee interactions and other business

It was noted that any change to the Committee membership had to be made via the national Delegates and that this information was solicited annually by the General Secretary following the ASC.

It was discussed and noted that it was the responsibility of every Committee member to transmit information on the timing and venue of all Committee-sponsored activities. Thus information on Theme Sessions, Workshops, Mini-Symposia and Symposia, should be conveyed to all interested parties in the member's country in an effort to improve the overall participation and attendance at the ASC.

The Chair adjourned the meeting and was thanked on behalf of the Committee for his hard work and dedication to the functioning of the Committee.

LIVING RESOURCES COMMITTEE (G)

Chair: R.C.A. Bannister (UK)
Rapporteur: H.J.L. Heessen (Netherlands)

The Committee met on Monday 25 September (14.00–18.00) and Friday 29 September (13.30–18.00). On average, there were 25 participants.

The Chair welcomed the participants, and H. Heessen (Netherlands) was appointed rapporteur. The agenda was adopted without amendment. The Chair announced that this was his last meeting as Chair and that the election would be held at the end of the session on 29 September.

Committee Business

The Chair explained the main purpose of the Business Sessions, being to:

- approve reports of the Working, Study, Planning Groups and Workshops held;
- review and approve their recommendations, and any additional ones proposed by the Committee;
- propose Theme Sessions for future Annual Science Conferences;
- discuss the draft Strategic Plan and the proposal for the New Advisory Structure;
- discuss the Committee Action Plan and Work Programme.

The Chair explained the proposal for the New Advisory Structure as laid down in Doc. Del:10, noting that it is proposed to have a new Advisory Committee on Ecosystems (ACE). The discussion that followed identified the need to define clearly the boundary between matters concerning the 'marine environment' and the 'ecosystem'.

Regarding the work of the Science Committees, the Committee discussed the need for good quality data, and sufficient attention to the peer review process. Worries were expressed over the decline in the numbers of scientists who are able to participate in ICES activities, since an increasing amount of time needs to be spent on contract work.

The Chair introduced the Committee Work Programme and Action Plan which had been drafted by the Consultative Committee during the previous year. He explained his concern about the absence of certain groups of specialists, who used to be regular participants at the Statutory Meeting, but who now seem to have lost their scientific 'home'. This especially holds for specialists in e.g. marine mammals, shellfish, and diadromous fish. Theme Sessions that address questions relevant to these species groups might be a partial solution to this problem.

The Chair identified four categories of activity for the Work Plan with examples as follows:

1. To identify topics coming from Working Groups, Study Groups, etc., such as:
 - biology behind the egg production method (batch fecundity, spawning fraction, mortality);
 - survey design and modelling;
 - demography of various species groups;
 - protocols for collecting cod growth data (request from Workshop on the Dynamics of Cod Growth (Doc. C:12, p. 41);
 - enhanced data collection (e.g. mammals, cephalopods).
2. Needs generated by ACFM/ACME, EU, or national programmes:
 - deep-sea species and related matters;
 - biological data in support of assessment;
 - monitoring new fisheries and studying the biology of new target species.
3. Topics arising from an inventory of national and EU programmes.
4. Individual scientific preferences:
 - Stock identification, ANACAT themes, shellfish themes; general life history and ecology, including processes involved in determining distribution, growth, mortality, reproduction, and abundance.

The inventory of the major topics of national research programmes should be made in the near future to define areas of research that are common for several countries.

Reports

In all, the Committee devoted three hours to the presentation and review of the various Working Group, Study Group, and Workshop reports.

Survey reports

The report of the Working Group on Mackerel and Horse Mackerel Egg Surveys (Doc. G:01) on the planning of the mackerel and horse mackerel egg survey in 2001 was presented by the Chair. In the survey, more attention will be given to the collection of fecundity samples. An

international proposal for funding by the EU has been submitted.

The report of the Working Group on Beam Trawl Surveys (Doc. G:12) on the results of the 1999 Beam Trawl Survey was presented by the Chair and accepted.

The report of the Workshop on the Estimation of Spawning Stock Biomass of Sardine (Doc. G:07) was presented by C. Porteiro. It was suggested that a new survey should be held in 2002, whereas in the long term these surveys could be held every three years. The report gave a useful review of the biological and statistical problems associated with using the egg production method. The Workshop was commended for its work.

The report of the Planning Group for Herring Surveys (Doc. G:02) was presented by J. Simmonds. The Group recommends the exchange of scientific personnel during future acoustic surveys, in order to increase comparability among participating vessels.

Species

The report of the Study Group on the Biology and Life History of Crabs (Doc. G:13) was presented by the Study Group Chair and accepted. The Group has worked by correspondence since the 1998 meeting.

The report of the Working Group on Marine Mammal Population Dynamics and Trophic Interactions (Doc. G:05) was presented by its Chair, A. Bjørge, who pointed to the need for improved monitoring and reporting of by-catches of marine mammals in the different ICES Member Countries.

The report of the Study Group on Elasmobranch Fishes (Doc. G:09) was presented by the Chair and accepted. The Committee supported the proposal that ICES should co-sponsor a NAFO symposium on Elasmobranch Fisheries in 2002, and noted that the Chair of SGEF had been invited to participate in the ICCAT meeting on sharks in November 2000, later postponed to September 2001.

The report of the Study Group on Life History of *Nephrops* (Doc. G:06) was presented and accepted. The report described new developments in analysing stock trends, assessing stocks using depletion methodology and studies on stock and recruitment. No further meetings of the Study Group are planned, due to problems in finding a new Chair. In the discussion the annual use of micro-tags was suggested as a possible tool for assessment.

The report of the Working Group on Cephalopod Fisheries and Life History (Doc. G:04) was presented by P. Boyle and accepted. The meeting of the Working Group was well attended since it was held back-to-back with an EU-funded meeting. Recently, data collection on cephalopod fisheries has improved, but there is concern

about the continuation of this Group after the end of the EU project.

The report of the Working Group on Crangon Fisheries and Life History (Doc. G:11) was presented by the Chair and the report was reviewed by F. van Beek, who complemented the Group for its comprehensive and detailed report, and the creative approach that was followed. This involved the use of new growth data, the analysis of mortality, and new initiatives to model the dynamics of *Crangon*.

Other reports

The report of the Stock Identification Methods Working Group (Doc. G:10) was briefly presented by the Chair. It was proposed that the Working Group might include problems with stock identification of deep sea fishes.

Theme Session proposals

2001

The Response of Cephalopod Populations and Fisheries to Changing Environment and Ecosystems (Conveners: Piatkowski (Germany), O'Dor, Borges (Portugal)).

The Life History, Dynamics, and Exploitation of Living Marine Resources: Advances in Knowledge and methodology (proposed Conveners: Addison (UK), Dufour (Canada), Friedland (USA), Kjesbu (Norway), Kamermans (Netherlands), Lockyer (Denmark), and Walker (Netherlands)).

The Stock Structure of Atlantic Cod: State of the Art (Conveners: Fevolden (Norway), Ruzzante (Denmark), Cross (Ireland), Arnarson (Iceland)).

The Scope and Effectiveness of Stock Recovery Plans in Fisheries Management (Co-Conveners: Connolly (Ireland) and others to be proposed).

2002

Advances in the Knowledge of Stock Definition, Abundance Measurement, and Ecosystem Effects of Exploiting Deep-Sea Resources (Co-Conveners: Hammer (Germany), Lorange (France), Bergstad (Norway), Gordon (UK)).

Pelagic Fish Populations and Climatic Effects: Integrating Relevant Knowledge in Stock Assessment and Forecasting (Co-Conveners: Borges (Portugal), Skagen (Norway), Porteiro (Spain), Rothschild (USA), Brander (UK)).

Size-Dependency in Population Processes of Marine and Freshwater Organisms (Co-Conveners: Pepin (Canada), Houde (USA), Gislason (Denmark), Pope (UK), Rice (Canada)).

Interactions between Distribution of Cetaceans and Fisheries (Conveners: to be determined)

Census of Marine Life: Turning Concept into Reality (Conveners: Pope (UK), Brander (UK), Bannister (UK), Bergstad (Norway)).

Joint proposal of the Resource Management and Living Resources Committees: Multi-Disciplinary Approach of the By-Catch and Discard Problem in Small Meshed Crustacean Directed Fisheries (Conveners: Revill (UK), Cotter (UK), Pascoe (UK), Dahm (Germany)).

Draft Resolutions

The Committee reviewed the Draft Resolutions proposed by the various Working and Study Groups. After minor changes, all were accepted.

An ICES contribution to the study of ecosystems, that could be the basis of a contribution to the Census of Marine Life was discussed. The Committee recommended that a Planning Group on Ecosystems and the Census of Marine Life (PGECML) should be established. Participants should include O.R. Godø (Norway) who co-ordinates a Norwegian contribution to the CML, and a representative of FAO (R. Grainger) who is responsible for the FAO FIGIS project for the compilation of stock assessment data.

The Committee also recommended that ICES co-sponsor:

1. a NAFO Symposium on Deep-Sea Fisheries to be held in September 2001 in Havana (Cuba);
2. a joint NAFO/CSIRO Symposium on Elasmobranch Fisheries to be held in September in 2002, with the Chair of the Study Group on Elasmobranch Fishes as a co-convenor.

The Committee recommends that ICES sponsors the participation of the Chair of the Study Group on Elasmobranch Fishes in an ICCAT elasmobranch assessment meeting in November 2000 in Madrid.

Other business

1. P. Pepin explained to the Committee the work of the Working Group on Recruitment Processes (parented by the Oceanography Committee)
2. At present there are two Working Groups, both dealing with marine mammals. Several scientists participate in both meetings, and this year the meetings were held back-to-back. It is proposed to merge both groups and to have the Marine Habitat Committee as the parent Committee. The reports of this new Working Group should be referenced to this Committee¹.
3. Some Working and Planning Groups on surveys are within the Living Resources Committee, whereas others are under the Resource Management Committee. It was proposed that during future ASCs surveys should be dealt with in joint sessions of the Committees.
4. There was discussion of the need for an increased flow of information to Working Group Chairs to explain changes to their Terms of Reference, or new Terms of Reference, under both the Science and Advisory Committees.

Election of a new Chair

H. Heessen (Netherlands) was elected Chair of the Committee for the next three years.

Close

After thanking the members and the rapporteur the Chair closed the sessions on Friday 29 September 2000, at 17:50.

¹ Delegates subsequently decided that this Working Group should be parented by the Advisory Committee on Ecosystems

Documents

G:01 Ref. D	Working Group on Mackerel and Horse Mackerel Egg Surveys (WGMEGS)
G:02 Ref. D	Planning Group for Herring Surveys (PGHERS)
G:03 Ref. D	Planning Group for Pelagic Acoustic Surveys in ICES Sub-Areas VIII and IX (PGPAS) - no report
G:04 Ref. ACFM, ACME	Working Group on Cephalopod Fisheries and Life History (WGCEPH)
G:05 Ref. ACFM, ACME, E	Working Group on Marine Mammal Population Dynamics and Trophic Interactions (WGMMPD)
G:06 Ref. ACFM	Study Group on Life History of <i>Nephrops</i> (SGNEPH)
G:07	Workshop on the Estimation of Spawning Stock Biomass of Sardine (WKSBS)
G:08	Workshop on Identification and Staging of Mackerel and Horse Mackerel Eggs (WKMHE)
G:09 Ref. ACFM	Study Group on Elasmobranch Fishes (SGEF)
G:10	Stock Identification Methods Working Group (SIMWG)
G:11 Ref. ACFM, B	Working Group on Crangon Fisheries and Life History (WGCRAN)
G:12 Ref. ACFM, E	Working Group on Beam Trawl Surveys (WGBEAM)
G:13 Ref. E	Study Group on the Biology and Life History of Crabs (SGCRAB)

REFERENCE PAPERS: C:02, C:03, C:11, D:06, D:07, ACFM:02, ACFM:05, ACME:02

BALTIC COMMITTEE (H)

Chair: T. Osborn (USA)

The Baltic Committee held Sessions on Monday 25 September and Friday 29 September. The Committee noted that a substantial attendance differential between Monday's meeting and Friday's meeting was due to the scheduling of the Open Forum on Tuesday. As well, Delegate meetings conflict with Committee meetings. Overlapping Committee meetings make it difficult for people representing two Committees to attend full time.

The Committee requests a clearer separation of the dates in the announcements for the ASC and the Statutory Meeting. In some countries, participants are funded for the Conference only, and some administrators do not realise that there is significant business that is not discussed within the ASC. For example, this year ACFM, ACME, Committee meetings, and the Open Forum were outside the Annual Science Conference time interval of 27–30 September.

Reports of Working Groups and Study Groups

Study Group on the Scientific Basis for Ecosystem Advice in the Baltic

The report of the Study Group on the Scientific Basis for Ecosystem Advice in the Baltic (Doc. H03) was presented and discussed. The basic remit of this Study Group was to prepare plans for a Workshop on the Scientific Basis for Ecosystem Advice in the Baltic. The Committee concluded that the Workshop should draw heavily on the expertise available in the universities. Therefore, it was decided to put forward a Draft Resolution to hold the Workshop in conjunction with the meeting of the Baltic Marine Biologists (BMB) and the Committee of Baltic Oceanographers (CBO) in late November 2001. These plans were agreed with the appropriate representatives of these groups who were present at the meeting. H. Ojaveer (Estonia), K. Myrberg (Finland), and H. Dahlin (Sweden) will be co-conveners of the Workshops, which will follow the BMB, CBO, and BMG sponsored conference 24–29 November. The Committee was informed that the BMB and CBO welcome ICES participation in the conference and are prepared to allocate part of the conference time to the subject – Scientific Basis for Ecosystem Advice.

J. Thulin indicated that funds should be available for strong participation from transition economies.

Baltic International Fish Survey Working Group

The report of the Baltic International Fish Survey Working Group (Doc. H:02) was accepted and the Draft Resolutions and recommendations in section II were accepted with the addition that it should additionally examine the report of the proposed Study Group on Herring Assessment Units.

Study Group on Baltic Cod Age-Reading

The report of the Study Group on Baltic Cod Age Reading (Doc. H:01) was accepted and the Draft Resolution supported.

Study Group on Salmon Scale-Reading Problems

The report of the Study Group on Salmon Scale-Reading Problems (Doc. H:06) and its Draft Resolution and recommendations were accepted. The Chair will seek the advice of the Chair of ACFM as to the relevance of the Study Group to ACFM.

Study Group on Multispecies Predictions in the Baltic (SGMPB)

The Draft Resolution that the Study Group on Multispecies Predictions in the Baltic should meet this coming year was accepted, noting that the meeting was delayed from last year.

New Study Group on GEOHAB Implementation on the Baltic

A report on the new IOC/SCOR programme on Harmful Algal Blooms (GEOHAB) was given by K. Kononen. The Committee endorsed ICES participation in a Baltic programme on Harmful Algal Blooms and proposed the establishment of a Study Group on GEOHAB Implementation in the Baltic.

Baltic GEF Project

The Committee was updated on the progress of the Baltic GEF project by J. Thulin, the Coordinator of the Project based in the ICES Secretariat. In discussion, it was noted that resources in the western countries are decreasing – both financial and human. The Committee concluded that the projects need to be integrated to be effective.

Environmental and fisheries status of the Baltic

The Committee received information on the status of the Baltic hydrological and chemical environment from W. Matthäus and on fisheries from T. Raid. This was the first of the overview reports that will be presented each year for general information about the ocean climate and fisheries status of the Baltic during the past year. The Baltic Atlas of Long Time Inventory and Climatology concept was presented. Regular information is available at <http://www.io-warnemuende.de/BALTIC>.

The Committee noted that the long-term hydro-chemical characteristics of all the main basins of the Baltic Sea

were presented at the meeting of ACFM's Baltic Fisheries Assessment Working Group in 2000. This report stated, "that environmental variations which affect fish populations in the Baltic are presently not fully known. However, knowledge of major environmental changes that occur between annual stock assessments might help improve short- and medium-term projection of fish stock development." Consequently the Working Group recommended that future overviews should pay particular attention to temperature, salinity, and oxygen content in the main cod and sprat spawning areas (Bornholm, Gdansk, and southern and central Gotland) and at depths where eggs and larvae most frequently occur (surface layers, halocline). The Baltic Committee confirms the necessity and usefulness of the presentation of a hydro-chemical assessment at the Baltic Fisheries Assessment Working Group's meetings. Representatives from the Institute of Baltic Sea Research, Germany, agreed to provide such assessment for 2000 to be presented to the Baltic Fisheries Assessment Working Group meeting in 2001. It is necessary to include in this assessment the characteristics of water exchange (e.g., inflow magnitude) between the North Sea and the Baltic.

It was recommended that technical details of assessment should be agreed upon between a representative of the Institute of Baltic Sea Research (Germany) and the Chair of the Baltic Fisheries Assessment Working Group.

Theme Sessions/Mini-Symposium

The proposal for the Committee to promote the Mini-Symposium in 2001 was further developed. Title – Ecosystem Change in the Baltic. Proposed conveners: E. Aro, B. MacKenzie, I. Vuorinen, T. Raid, and S. Hansson.

Other matters

The title of section 3 of the Work Plan for the Baltic Committee should be changed from "work toward an integrated approach to ICES advice in the Baltic" to "work towards an integrated ecosystem approach for science in the Baltic".

Documents

H:01	Study Group on Baltic Cod Age-Reading (SGBCAR)
H:02 Ref. D	Baltic International Fish Survey Working Group (WGBIFS)
H:03 Ref. A	Study Group on the Scientific Basis for Ecosystem Advice in the Baltic (SGBEAB)
H:04	Baltic Herring Age-Reading Study Group (BHARSG)
H:06	Study Group on Salmon Scale-Reading Problems (SGSSR)

REFERENCE PAPERS: B:04, C:02, ACFM:09, ACME:03, ACME:04, ACME:06, ACME:09

REPORT OF FINANCE COMMITTEE

Chair: Alfred Post

The Committee met on Thursday 28 September 2000 from 08.30 – 12:35 hrs.

All members were present except Mogens Schou (who was replaced at the meeting by the other Danish Delegate Mr Niels Axel Nielsen) and Professor Jan Thulin, who had informed the Chair that he wished to step down from his post. The First Vice-President (representing the Bureau), the General Secretary, J. Andersen-Rosendal, and I. Lütz-høft from the ICES Secretariat, also participated.

Agenda Item 1 APPROVAL OF AGENDA

The draft Agenda was adopted as presented.

Agenda Item 2 APPOINTMENT OF CHAIR AND TWO MEMBERS OF FINANCE COMMITTEE

The First Vice-President proposed, and the Committee agreed, that Robert Aps (Estonia) and André Forest (France) be nominated for the approval of the Council as members of the Committee. The Chair expressed his appreciation of the proposals and said it was appropriate for the Member Countries to share the responsibilities. He undertook to forward the proposal to the Bureau.

Agenda Item 3 FINAL ACCOUNTS FOR FINANCIAL YEAR 1998/1999

The General Secretary summarised the final Income and Expenditure Accounts and Balance Sheet for the Financial Year 1998/1999 (Doc. C.M. 2000/Del:1). He drew attention to:

- 1) The Profit and Loss Account indicated a profit of DKK 765,525 for the year as a whole, which was allocated as DKK 85,351 to the Capital Reserve Fund, DKK 350,000 held in reserve for an ACME meeting in January 2000, DKK 200,000 paid back to the Capital Reserve Fund, and finally an Excess of Income for 1998/1999 of DKK 130,174;
- 2) Under Income
 - a) The National Contributions had been paid in full apart from Belgium. Other Contributions were close to the budgeted figures,
 - b) Ongoing Projects was about DKK 1,864,000;
- 3) Under Expenditure
 - a) Salaries showed savings of about DKK 96,000;
 - b) Office Expenses were about DKK 47,600 over the budget;
 - c) Travels and Meetings showing savings of about DKK 228,000.

In the subsequent discussion in the Committee, it was noted that for next year's meeting a supplementary docu-

ment should be prepared by the Secretariat explaining the Income and Expenses for each of the Ongoing Projects.

The Chair noted that this was the last Final Account in this form. The Chair, G.J. van Balsfoort, Tomasz Linkowski, and the Danish Delegate signed the Accounts and Balance Sheet and also signed for the receipt of the Long-Form Audit Report.

Agenda Item 4 ESTIMATED ACCOUNTS FOR FINANCIAL YEAR 1999/2000

The Chair explained that the Estimated Accounts 1999/2000 was unique and would be presented with two year-end columns, i.e. 31 October 2000 and 31 December 2000.

The General Secretary reviewed the Estimated Accounts for the Financial Year 1999/2000 (Doc. C.M. 2000/Del:4). He pointed out that:

- 1) Under Income
 - a) All National Contributions had been paid in full;
 - b) Other Contributions were expected to be in general accord with the budget. However, item 10 Ongoing Projects showed DKK 3,383,281 expected at 31 October. Miscellaneous income (item 12) DKK 721,000 is income received from EC for non-recurring advice as well as extra income from OSPAR to hold an extra ACME meeting in January 2000;
 - c) Item 12a (income from sale of bonds) DKK 1,002,000 is expected to be the amount needed to balance the income and expenses at the end of December 2000;
- 2) Under Expenditure
 - a) Salaries were showing some savings for Professional- and General Service-grades, and for Periodic Assistance at the end of 31 October 2000;
 - b) Office Expenses were in balance;
 - c) EDP Expenses are expected to be slightly over-spent;
 - d) Expenses for ASC 2000 are expected to be under budget; the income stemming from ASC fees are held in reserve for the coming years;
 - e) Expenses for Travel and Meetings would be less than budgeted. This was due to reduced costs for the Secretariat staff ;
 - f) Publications costs were less than budgeted, due to smaller activities and the introduction of new production measures (e.g. printing 'on-demand').

It was expected that there would be a need to sell bonds of about DKK 1,002,000 to make a satisfactory balance between Income and Expenditure for the year as a whole at the end of the 14-month period.

After some discussion, the Committee accepted the Estimated Accounts for 1999/2000 as shown and agreed to submit it to the Bureau and Council without change.

Agenda Item 5 DRAFT BUDGET FOR FINANCIAL YEAR 2001

The General Secretary summarised the draft Budget for the Financial Year 2001 (Doc. C.M. 2000/Del:5) He drew attention to changes compared to the Forecast Budget as adopted by the Council at the 1999 ASC:

- 1) Income as a whole had been revised downwards by DKK 555,000. Income from Interest was moved to *Interest Receivable*. Income from Contributions from EC, IBSFC, NASCO, and NEAFC 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 was reduced to DKK 162,500 in accordance with HELCOMs budget. The contributions from Scientific Observers include one more observer (Chile), and all contributions have been adjusted for inflation costs;
- 2) Salaries as a whole had been adjusted downwards compared with the Forecast Budget approved at the ASC in Stockholm;
- 3) Office Expenses have been increased by DKK 255,000, i.e. Library DKK 5,000, Office Maintenance by DKK 150,000 for equipping and furnishing extended accommodation, and Public Relations as a new item of DKK 100,000 to reflect a operational budget for the new Communications Officer;
- 4) Publications have been adjusted to reflect the savings for the print-on-demand for ICES Annual Report, and the expected increase in expense for ICES Marine Science Symposia.

The Chair noted the move of the interest to Interest Receivable and noted that the Auditors have recommended that interest should not be listed as ordinary income.

In the subsequent discussion in the Committee, it was noted that the sum connected with point 3 above were expenses needed for moving in to the new premises kindly provided by our host country, improving the quality of the meeting facilities at ICES Headquarters.

The First Vice President noted that there was no budget for Ongoing Projects. He wanted a document prepared by the Secretariat explaining the Income and Expenses for each of the Ongoing Projects.

After a discussion, the Secretariat was requested to develop a template for future Draft Budgets showing the regular ICES Budget and each Ongoing Project in an integrated document.

The Danish Delegate recommended that Ongoing Projects should be shown, together with a footnote: "Best estimate,

under current written agreements, for project outgoings in 2001 and subsequent years." This was agreed.

With that amendment, the Committee accepted the draft Budget for 2001 and recommended its approval by the Council.

Agenda Item 6 DRAFT FORECAST BUDGET FOR FINANCIAL YEAR 2002

The Chair informed the Committee that the Draft Forecast Budget for 2002 only held a minor increase of 3% for the Member Countries.

The General Secretary noted that the Draft Forecast Budget for the Financial Year 2002 had been produced at the February 2000 Bureau Meeting and issued as Doc. C.M. 2000/Del:6. He noted that a REVISED C.M. 2000/Del:6 had been distributed to eliminate misunderstanding in the comparison between 2001 and 2002.

- 1) Income consisted of:
 - a) National Contributions, which was increased by 3% relative to the 2001 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. The contributions from the Faroe Islands and Greenland have been increased in line with that of the Member Countries.
- 2) Expenditure consisted of:
 - a) Salaries, with the increase covering both salary steps and inflation increases of current staff. Personnel Services reflect these changes;
 - b) Office Expenses increased, to reflect realistic requirements;
 - c) EDP Expenses show the projection of costs;
 - d) Council Meeting Expenses and Centenary Celebration to be held in Copenhagen, Denmark, are expected to be DKK 900,000. Denmark as Host Country will cover the expenses for the Centenary Day activity to be held on 4th October 2002;
 - e) Travels, Meetings, etc. have increased by DKK 100,000 for travel cost for the Bureau, other travel cost showed no change as a whole compared with the previous year;
 - f) Publications increased slightly compared with the previous year.

The Committee proposed that the Forecast Budget for 2002 be submitted to the Council for further consideration within the procedure of approval.

Agenda Item 7 APPOINTMENT OF AUDITORS FOR 2001

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 8 MATTERS REFERRED TO
COMMITTEE BY BUREAU OR
COUNCIL**

No matters were referred.

Agenda Item 9 ANY OTHER BUSINESS

The Chair proposed a revision in the Rules of Procedure of rule 24 in order to avoid conflicts in the future. He proposed to insert a sentence: “provided that he remains a Delegate during that period”.

The First Vice-President and the Danish Delegate said that such an amendment was unnecessary since the whole thrust of Rule 24 is that the Finance Committee consists of Delegates only.

The Danish Delegate proposed that the President and the General Secretary check the rules for the need of other changes.

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 THE PERIOD 1 NOVEMBER 1998 – 31 OCTOBER 1999

Note	DKK
Income	
1 National Contributions	15,319,100
2 Other Contributions	4,667,592
Sale of Publications	71,094
Miscellaneous Income	56,051
Observers Contributions	92,720
Transferred from Capital reserve Fund	200,000
Ongoing Projects	1,864,040
	22,270,597
Expenditure	
3 Salaries	12,980,265
4 Office Expenses	1,935,230
EDP Expenses	1,108,459
5 Travels and Meetings	2,752,355
6 Publications	310,504
Pensions	700,506
Incidentals for President and Chairmen	246,200
Write off of NAFO Maps	15,000
Expenses for Ongoing Projects	1,864,040
	21,912,559
Operating Result	358,038
7 Interest Receivable	407,487
Interest Payable	0
Profit for the Year	765,525
Allocated as follows	
Interest transferred to Capital Reserve Fund	85,351
Reserve to ACME January 2000	350,000
Pay back to Capital Reserve Fund	200,000
Excess of Income 1998/1999	130,174
	765,525

BALANCE SHEET AT 31 OCTOBER 1999

Note

ASSETS	DKK	DKK
Current Assets		
Stocks.....		36,826
Debtors		
Debtors Publications.....	16,167	
Prepaid Expenses.....	147,100	
Unpaid Contributions.....	112,720	
8 Other Debtors.....	360,220	
Total Debtors.....		636,207
9 Investments.....		5,957,422
Cash at bank and in hand.....		12,441,445
TOTAL ASSETS.....		19,071,900
LIABILITIES		
10 Total Capital and Reserves.....		2,896,889
Prepaid Contributions.....	13,878,645	
Prepaid Ongoing Projects.....	1,212,724	
Trade Creditors.....	262,817	
NSTF Benthos.....	10,907	
Publications.....	339,255	
Young Scientist Fund.....	459,933	
11 Other Creditors.....	10,730	
Total creditors.....		16,175,011
TOTAL LIABILITIES.....		19,071,900

David de G. Griffith

David de G. Griffith
General Secretary

Jytte Andersen-Rosendal
Jytte Andersen-Rosendal
Office Manager

AUDITORS' REPORT

We have audited the final accounts of the International Council for the Exploration of the Sea for 1998/1999.

Basis of opinion

Our audit was carried out in accordance with Rule 20(vii) adopted at the 82nd (1994) Statutory Meeting in Canada and included such auditing procedures as we considered necessary.

Our audit has not given rise to any qualifications.

Supplementary Information

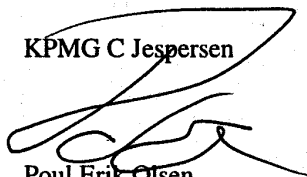
The result for the year is influenced by the transfer of DKK 200,000 from Capital to the Profit and Loss Account.

Opinion

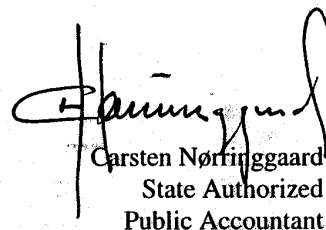
In our opinion, the final accounts of the International Council for the Exploration of the Sea as at 31 October 1999 present fairly assets and liabilities, the financial position and profit for the year.

Copenhagen, 25 February 2000

KPMG C Jespersen




Poul Erik Olsen
State Authorized
Public Accountant



Carsten Nørringgaard
State Authorized
Public Accountant

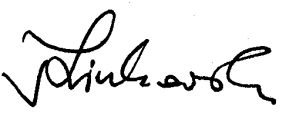
Having scrutinized the Final Accounts and Balance Sheet, we recommend that the Bureau submits the document to the Council for approval.



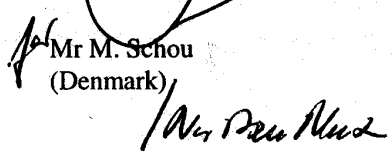
Prof. A. Post
Chairman



Dr G. van Baisfoert
(Netherlands)



Dr T. Linkowski
(Poland)



Mr M. Schou
(Denmark)

Prof. Jan Thulin
(Sweden)

BUDGET FINANCIAL YEAR 2001

INCOME

	Revised Budget 1999/2000 DKK	Approved Forecast 2000/2001 DKK	Budget 2001 DKK
INCOME			
Belgium	638,100	657,240	657,240
Canada	957,150	985,860	985,860
Denmark	957,150	985,860	985,860
Estonia	319,050	328,620	328,620
Finland	478,575	492,930	492,930
France	1,276,200	1,314,480	1,314,480
Germany	1,276,200	1,314,480	1,314,480
Iceland	957,150	985,860	985,860
Ireland	638,100	657,240	657,240
Latvia	319,050	328,620	328,620
Netherlands	957,150	985,860	985,860
Norway	1,276,200	1,314,480	1,314,480
Poland	957,150	985,860	985,860
Portugal	638,100	657,240	657,240
Russia	957,150	985,860	985,860
Spain	957,150	985,860	985,860
Sweden	957,150	985,860	985,860
United Kingdom	1,276,200	1,314,480	1,314,480
USA	957,150	985,860	985,860
Total	16,750,125	17,252,550	17,252,550
Interest	400,000	400,000	0
Other Contributions	5,402,710	5,670,872	5,566,620
Contributions from Observers	86,000	95,498	134,254
Sale of Publications	50,000	150,000	60,000
GRAND TOTAL	22,688,835	23,568,920	23,013,424

EXPENDITURE

	Revised Budget 1999/2000	Approved Forecast 2000/2001	Budget 2001
Incidentals for President and Chairmen	55,800	55,800	55,800
Salaries	15,622,556	16,363,895	15,796,224
Office Expenses	2,085,550	2,157,800	2,412,800
EDP Expenses	1,281,700	1,351,100	1,351,100
Expenses for ASC	710,000	710,000	710,000
Travels, Meetings, etc.	2,180,000	2,195,000	2,175,000
Publications	468,900	503,900	512,500
Excess of Expenditure over Income 1996/1997 (refers to Column one only)	94,979	0	
To Cover Extra Facilities and Work Needs (this post is eliminated from the Draft Budget 2001)	189,350	231,425	0
GRAND TOTAL	22,688,835	23,568,920	23,013,424

	Revised Budget 1999/2000	Approved Forecast 2000/2001	Budget 2001
INTEREST RECEIVABLE			
Interest			400,000
Interest transferred to Capital Reserve Fund			400,000

REPORT OF PUBLICATIONS COMMITTEE

Chair: Professor Peter R. Boyle

The Committee met on 29 September from 8.30 to 13.00. All members except the Chair of the Consultative Committee were present, in addition to Dr William R. Turrell, Dr J. Alistair Lindley, John Ramster, Dr J. R. G. Hislop, Dr A. I. L. Payne, Dr Andrew Richford and Amy Hall of Academic Press, and the ICES Senior Editor; the ICES Oceanographer was present during the latter part of the meeting.

Agenda Item 1 INTRODUCTION

The Chair reviewed the composition of the Committee and described its remit and the role of the Council's publications as defined in Article 1 of the 1964 ICES Convention and Rule 27 of the ICES Rules of Procedure, as well as those mentioned in the initial Strategic Plan under current consideration. It was evident that the Committee was intended to fulfil a core function within ICES by maintaining an overview of its publications and offering advice on how best to interpret and present to a wider public what was arguably much of the Council's most important work. It had become equally evident, however, that translating the Committee's views and proposals into action constituted a major problem: the absence of a publications policy—as seen in the lack of defined responsibilities and routes for decision-making and review—had led to a situation in which the Committee, judging by results, appeared to have little or no voice.

Meeting participants were encouraged to consider ways in which this highly unsatisfactory situation could be changed so that ICES publications would eventually be able to play the central role initially envisaged for them by the Council.

Agenda Item 2 APPROVAL OF AGENDA

The Draft Agenda (Doc. ICES CM 2000/Pub:1) was presented and accepted. Agenda Items 3–8 were substantive in nature and were all supported by individual documents. Items 10 and 11 were listed separately to focus on their different content, but given their general relevance to other topics and inevitable overlap with each other, they would be discussed sporadically throughout the meeting as well as together at its conclusion.

Agenda Item 3 REVIEW OF ICES PUBLICATION ACTIVITIES IN 1999/2000

Doc. ICES CM 2000/Pub:2 provided an update on ICES serial publications since the 1999 Annual Science Conference. It furnished an overview of activity with background information on publications that in most cases would be addressed and described in greater detail in other reports as specific Agenda Items. The Committee commented favourably on the progress made during the year and expressed the hope

that there would be no repetition of what has been termed the "internal publications crisis" of recent years stemming from mismatches between Council commitments and the staff and funding resources available. Such a repetition could best be avoided if Committee members were in a position—which they were not, under present circumstances—to maintain an overview of publishing plans and to comment on them.

Agenda Item 4 ICES JOURNAL OF MARINE SCIENCE

Agenda Item 4.1 Editors' Report for 1999/2000

The Editor-in-Chief presented Doc. ICES CM 2000/Pub:3, which reviewed activity during the preceding year, including details of the handling of ICES Symposium volumes. The total number of pages published, 1297, was the highest ever in this series, a record accomplished under difficult circumstances. In a standard year, four issues contained articles on mixed topics and two contained symposium proceedings, but late submissions of the latter by Guest Editors had led to a build-up that needed to be dealt with in a very short time, at the cost of excessive pressure placed on the *ICES Journal* team.

Since the 1999 Annual Science Conference, not two but four proceedings volumes had been published: Vol. 56(6), Vol. 56 Supplement, Vol. 57(2), and Vol. 57(3), in addition to three regular issues on mixed topics. (The remaining numbers for 2000, Vols. 57(5) and (6), still in press, would also contain symposium proceedings.)

It should be noted that in compliance with a decision made by the Publications Committee during the 1999 meeting as a compromise solution to a steadily worsening problem, Vol. 57(2) was published as Part 1 of the proceedings stemming from the ICES Symposium on "Recruitment Dynamics of Exploited Marine Populations: Physical–Biological Interactions" (Baltimore, 1997). Despite repeated representations, the full complement of more than 60 papers had not yet been submitted by the Guest Editor and it was uncertain when the process would be finished. In an attempt to accommodate the pressing needs of authors whose work had long ago been committed to the *ICES Journal* and accepted for publication, and to prevent further damage to the Council's reputation for timely production of proceedings volumes, it was decided that there would have to be two volumes. The first, Vol. 57(2), dated April 2000, contained the 27 articles received from the Guest Editor by 1 January. The second will contain those received in time to be published as Vol. 58(5), dated October 2001. It was a positive sign that the Guest Editor had already submitted a number of these manuscripts.

In line with standard practice, Symposium participants had been informed that their registration fees would cover the

provision of copies of the published proceedings. Copies of Part 1 were so distributed and ought to have been paid for over the Symposium budget. In the event, the latter could cover only a fraction of the cost. The problem posed by having to finance two such copies principally at Council expense remained to be solved.

The presence of most of the *IJMS* Editors at the current ICES Annual Science Conference had made it possible for them to meet and discuss a range of editorial issues, including the special problems associated with symposium proceedings such as those mentioned above. In addition to the problems arising from the inability of some Guest Editors to meet their deadlines, there were often others relating to lack of experience with managing large volumes of material, steering submissions through the refereeing process, and otherwise coping with a multitude of editorial and administrative decisions. It had been decided that a regular member of the *ICES Journal* team would henceforth be linked with each ICES Symposium and its Guest Editor(s) for the proceedings at as early a stage as possible. The *IJMS* Editor would be able to provide guidance and assistance from the very beginning, and also to take preventive action if necessary before things could get out of hand. All ICES Symposium Conveners would be given early notification of this decision.

Further progress in handling the editorial work had been made following the Midterm Meeting of the Bureau in June. The Editor-in-Chief had been invited to prepare a paper for the meeting, presenting an overview of this work. It had become apparent that the number of papers submitted was so great that the Editors were finding it nearly impossible to meet the constantly expanding demands on their time created by this excessive burden, and Bureau members were interested in surveying the situation to see whether they might be able to offer assistance. The paper described the present set-up and working arrangements along with the principal problems and offered a number of possible solutions. A significant result emerged from the Bureau's rapid response. They wished to see two additional Editors appointed as soon as possible, raising the number from four to six, including the Editor-in-Chief, and would be willing to cover the additional expense from Council funds until a more permanent solution could be worked out with Academic Press.

The positive outcome was that Dr A. I. L. Payne had been appointed on an interim basis for the second half of 2000 and had immediately begun to share the work. This had provided substantial and welcome relief for some of the Editors. While it was commonly considered that similar editorial work might reasonably be assumed to take about one day a week, it had become clear that much more time than this was still not sufficient, thus there was always an imminent danger that excellent editors would find it necessary, however reluctantly, to terminate their commitments to ICES work. Accordingly the Committee were very pleased to hear during the ensuing discussion that Academic Press would support the formal appointment of two more Editors, including Dr Payne, to the regular team, commencing in January 2001. The costs would be handled over the ICES / Academic Press joint account.

Tables and figures in the Editors' Report detailed the schedule for symposium proceedings, past, present, and future; and illustrated the wide range of topics covered according to country of submission, the number of pages published annually over the past decade, and the status of texts received in 1999 compared with the preceding year (which would be adjusted to take into account the actual number of manuscripts rejected). This material was most helpful and would be refined and continued in future reports.

Agenda Item 4.2 Academic Press Publisher's Report for 1999/2000

Dr Richford, Executive Editor with Academic Press (AP), described his role as the Commissioning Editor for the *ICES Journal* and that of Amy Hall as the Production Editor responsible for the day-to-day detail. He presented Doc. ICES CM 2000/Pub:4.

The print subscription figures seen in the report had dropped slightly but were viewed as being satisfactory and holding fairly steady. Personal subscriptions, usually priced at about one-third the cost of institutional subscriptions, were only a minor source of income but would continue to be offered mostly as a public relations gesture. Revenue generated by print subscriptions should be seen in relation to that stemming from electronic subscriptions, which had grown to 15% of the total in 1999, compared with 11% in 1998. By the end of 1999, the steadily increasing annual profits in recent years had, most notably, succeeded for the first time in eliminating the cumulative deficit built up since 1991. The 1999 net profit of GBP 9787 had been shared equally between ICES and AP. If the figures for 2000 continued this trend in growth it was expected that the income accruing to ICES for the year would exceed GBP 20,000. The *IJMS* Editors and Publications Committee members considered it most important that such income be reserved to support ICES publications and used to improve their quality and widen their distribution and availability.

The AP system of providing online subscriptions to library consortia was described. Some 80 groups comprising a total of 1600 institutions with more than nine million potential users held licences granting access to the AP portfolio of publications, including the *ICES Journal*. A steady migration away from paper-only subscriptions to electronic-plus-paper subscriptions could be noted. While most subscriptions to electronic versions of AP publications were being backed up with subscriptions to the paper versions at a special discount, it was predicted that the number of paper subscriptions would fall, a development that was already being observed. The great increase in the number of downloads of *IJMS* articles—from 1021 in 1997 and 1063 in 1998 to 5394 in 1999—was striking and encouraging evidence of the strong interest in its contents and growing stature.

The full panoply of AP's present facilities and future plans for increasing electronic access to its journals in several different ways for a broad scope of various needs was noted with interest. Discussion ranged across implications and issues relating to page budgets, dates of publication, editorial

emendations, definitive versions, offprints, copyrights, multimedia links, and preferred electronic formats for specific purposes.

The production details in the Publisher's Report showed that for recent numbers there was a considerable discrepancy between the cover date and the actual date of publication and distribution, when compared with the figures for former years. Various reasons for these delays were advanced and would later be explored in greater detail in discussions between the *IJMS* Editors and AP. In particular a more stringent administration of conventional procedures should be able to reduce some of the delays. This was most important in the case of symposium proceedings but less so with respect to "regular" papers which could, if necessary, be held over to the next issue. It was agreed that better communication between the parties involved could help to clear up some of the substantial problems that had been encountered on all sides. With respect to the information provided on page budgets and the way in which they had been exceeded when large symposium issues were published, it was accepted that extra pages in proceedings issues were paid for by external sources and should therefore not be so tallied; future production reports would not classify such pages in this way.

AP considered the overall picture in recent years to be extremely healthy. One measure of reader interest, the ISI citation index, was a little lower than that for 1998 but remained steady in the higher range reached in 1996/1997. General prospects were clearly positive, but it was essential that attention continue to be concentrated on attracting the best possible material so that the *ICES Journal* could in the first instance maintain its current size and standards, and then preferably grow in response to need, in line with the general view that the larger journals were most attractive to readers.

The Committee commended the Editors and Academic Press on their success in producing a journal noted for its quality and high standards, which were not only widely acknowledged but continuing to draw increasingly favourable comment.

Agenda Item 5 ICES COOPERATIVE RESEARCH REPORT SERIES

Doc. ICES CM 2000/Pub:5 was circulated at the meeting. Five numbers in the *CRR* series had been published since the 1999 Annual Science Conference. This represented a considerable drop from the twelve issued in 1998/1999, but that number could be considered artificially high, representing as it did a recovery from the preceding year when but a single number had been issued owing to the diversion of staff and financial resources to other priorities.

CRRs currently in the pipeline included the ACME Report for 2000, which would be given special attention to ensure that it was off press before the end of the calendar year.

As mentioned during previous sessions the Committee would welcome further clarification and assurance that there

was a system in place for coordinating commitments to publish these reports with the resources available. It was suggested that the Secretariat ought to increase its capacity to handle editorial work in order to prevent the recurrence of the unconscionable delays that had taken place in recent years. Staffing shortages should not be allowed to lead to delays that obviously reduced the timeliness and value of these publications as well as discouraging potential authors and editors from contributing their work.

Also in line with earlier discussions, attention was drawn to the wide diversity of topics and content covered by numbers in this series, some of which might benefit from being published elsewhere, such as in a new series, rather than being clubbed together with a mix of dissimilar material. Thought should be given to developing a more accessible format with possibilities for quicker publication for the ACFM and ACME Reports along with others that could be considered peer reviewed, with an eye to raising their profiles and widening their distribution. Certain *CRRs* had dealt with extremely important and interesting subjects, and it was regrettable that it had not been possible to focus special attention on them to increase their visibility. Others, notably No. 194, "Atlas of North Sea Fishes", had been in such demand that they were out of stock, but they had not been reprinted. Commercial interest in publishing or reissuing such numbers should be encouraged, so long as adequate recognition was given to ICES' role in producing the material.

The lack of an editorial policy to guide selection, production, and circulation of numbers in this series had resulted in wasted opportunities with serious and unfortunate consequences: some authors and editors saw little point in publishing their work in *CRRs*, and ICES failed to take advantage of obvious channels for projecting itself, its greatest strengths, and the important resources at its disposal to a wider audience.

This series included some numbers that were eminently well suited to distribution on the Web, and qualified attention should be devoted to exploring the implications and possibilities for making them not merely viewable as at present in some cases but available on the ICES Website for free downloading and copying.

Agenda Item 6 ICES IDENTIFICATION LEAFLETS FOR PLANKTON

Dr Lindley, Editor of the "Plankton Leaflets", presented Doc. ICES CM 2000/Pub:6. No new numbers had been published during the preceding year, but manuscripts for two new leaflets, one on Dendrobranchiata and another furnishing a numerical and taxonomic index of all leaflets published since 1939, had been completed. For the first time this material had been drawn into the procedure that had become usual for handling certain other ICES publications. The manuscripts had been sent to experts who were members of relevant working groups for comment and would be submitted for approval as Council Resolutions during the current Annual Science Conference before a decision could be made

to publish them. Future numbers would also be expected to follow this path. It was agreed that formal links should be established with the working groups on respectively Zooplankton Ecology and Phytoplankton Ecology. These groups would be able to assist the Editor and the Council by commenting on content, apparent need, and other aspects relevant to publication. It was hoped that this could help to prevent some of the production delays that had occurred in recent years, which had been an impediment when it came to encouraging authors to submit new work. A number of the leaflets were out of print or otherwise in need of replacement or revision, and there were certain gaps in coverage. The Editor would welcome proposals from those who would be interested in contributing to the series. Members of the Publications Committee considered many of the Plankton Leaflets well suited to distribution via the ICES Website, preferably formatted for free downloading; they would like to see resources made available to explore this possibility and its implications.

**Agenda Item 7 ICES IDENTIFICATION
LEAFLETS FOR DISEASES
AND PARASITES OF FISH
AND SHELLFISH**

Doc. ICES CM 2000/Pub:7 was presented. It had originally been reviewed by the Working Group on Pathology and Diseases of Marine Organisms which continued to oversee publishing plans for this series. No new numbers had been issued during 1999/2000, but the report listed twelve leaflets that were in line for updating in addition to several titles for new leaflets that the WGPDO had proposed. Prospective authors had been approached in all cases. Most members of the WG felt that peer review would be beneficial and would not slow down publication in any significant way; it was expected that this could be introduced without difficulty. There was strong WG support for placing the leaflets on the Web, perhaps in .pdf format, for viewing. Among the advantages would be the possibility of including colour images to assist diagnosis, at no appreciable cost. Members of the Publications Committee noted all points with interest and were pleased to hear of the interest in placing the leaflets on the Web. They wished to encourage this approach and see it extended in fact to having all the suitable leaflets presented in a format suited to free downloading from the ICES Website.

**Agenda Item 8 ICES TECHNIQUES IN MARINE
ENVIRONMENTAL SCIENCES**

Doc. ICES CM 2000/Pub:8 (with an annex listing the 27 numbers published since 1987) reported the publication of four numbers in 1999/2000, following on the four that had been issued in 1998/1999. An additional four had been approved by the Council and were waiting to be completed in the Secretariat when resources became available, and a fifth was being reviewed. The impact and value of numbers in this series were very dependent on timely publication, and the methodologies described were often urgently needed and integral to the work of international monitoring programmes; accordingly, any delays in publication were of particular

concern. As in the case of the *CRRs* and the two series of Identification Leaflets described above, the Publications Committee would recommend that serious attention be given to making numbers in the *TIMES* series available for free downloading from the ICES Website.

**Agenda Item 9 CENTENARY PUBLICATION
PLANS**

John Ramster, a member of the former Bureau Working Group on the Planning of the ICES Centenary, had continued to assist the Council by following up on publication plans discussed by that group. He briefly reviewed the state of play respecting some of those projects. (1) Dr Helen Rozwadowski was within a few months of completing the book she had been commissioned to write about the Council's history and which was scheduled for publication in May of 2002, the Centenary year. In the course of the current Statutory Meeting a decision would be made regarding which of the publishers under consideration should be chosen. (2) Prospects were still being reviewed for reissuing *Study of the Sea*, the anthology of articles from ICES publications edited by Edgar M. Thomasson, former ICES Librarian and Information Officer; it was expected that it would be expanded by the addition of some thirty pages of new material being prepared by a number of scientists under the guidance of Dr Pierre Petitgas. (3) Consideration was being given to how best to publish various articles and lectures focusing on ICES history and the Centenary, including those presented during the 1999 Annual Science Conference. (4) It had been decided that the proceedings of the ICES Symposium on "100 Years of Science under ICES" (August 2000, Helsinki) would be published in the series *ICES Marine Science Symposia* in 2001. The Secretariat would undertake to generate the text and graphics in house, and the printing would be contracted out to a local Danish firm.

**Agenda Item 10 ROLE OF ICES PUBLICATIONS
IN THE WORK OF THE
COUNCIL**

The Committee reiterated its views on the role of ICES publications, which had already been advanced and strongly stated during previous meetings. In essence, the publication and dissemination of work carried out under its auspices constituted one of the fundamental purposes of the Council; however, in the absence of an accepted policy and routes for handling the publications this purpose had gradually been lost from view in the face of competing claims for available resources. The central role intended for publications had been made abundantly clear in the core documents establishing and defining the Council's work, both past and present. These ranged from the oft-quoted ICES Convention to the most recent version of the Strategic Plan now in circulation. At the same time it had become all too evident that the publications were not fulfilling their potential for reflecting and helping to shape essential ICES aims and programmes and presenting them to a wider public. They had not kept pace with changing science and communication needs. As the chief means by which those outside immediate ICES circles

could know about the Council's work and from which it could, in turn, generate support, the publications needed to be supported and strengthened so they could fill this key role in the best way possible.

Having considered how to translate their views into action several times in the past but without being able to elicit an adequate response from existing bodies, the Committee had concluded that the only way forward would be to dissolve its present structure and establish a new one. It was essential that the work of the Committee be linked not to the Bureau as in the past but rather integrated into the core science function of ICES and thus linked to the Consultative Committee, to which it would report directly. Only in this way would members be involved in the decision-making at a level where they could play an active part in determining the proper role of the publications in relation to the scientific programme through monitoring their progress and implementing changes in policy. The membership of the new Committee should comprise three main components: (1) editors and publishers of ICES output; (2) executive representation from the ICES Secretariat responsible for implementing policy; and (3) science representation from the main ICES Science Committees.

These changes in the constitution and position of the Committee should make it possible for members to help ensure that the publications would be able to fulfil their potential and become a strong and valuable asset for the Council.

Agenda Item 10 recommendation:

That Rule of Procedure 27, under which the Publications Committee is established, be redrafted to establish a new Committee directly linked to the science programme and with capability to implement publication policy.

Agenda Item 11 ICES PUBLICATIONS AND ELECTRONIC MEDIA

The continuing importance played by electronic media as a means of communication was again a focus of attention. As seen in the preceding discussion of most of the ICES publications the Committee considered it essential that steps be taken to exploit the advantages inherent in making them

available for free downloading from the ICES Website. Those publications now accessible for viewing only should be converted to a format for free downloading. For reasons of accessibility, timeliness, and cost, such a move towards electronic publication should be made *immediately*. Since the "internal" publications cannot be reliably costed it is not possible at the moment to obtain an accurate overview of the financial implications, but it is most likely that savings in printing, handling, and postage costs would far exceed any costs associated with making them available on the Web. It was thought that a designated post within the Secretariat, most appropriately the new Communications Officer, should be responsible for managing and overseeing the transfer of these publications to the Web.

It was understood that print versions should continue to be available, and that there might be individual publications not suited to such treatment. However, electronic publication should become the normal mode of access for most of the "internal" ICES publications such as the *CRR* series.

Committee members continued to be interested in finding ways to improve and speed up production and distribution of the CDs carrying Council Meeting papers and were pleased to note that the Secretariat was engaged in exploring these possibilities.

Agenda Item 12 MATTERS REFERRED TO COMMITTEE BY BUREAU AND COUNCIL

No specific issues were referred to the Committee.

Agenda Item 13 ANY OTHER BUSINESS

The Chair would prepare a personal summary of the Committee's discussion for presentation to the Delegates as he had done in previous years as the most effective way of bringing to their attention matters of special importance. Other commitments would prevent him from presenting the summary himself, but Dr Turrell had kindly consented to do this on his behalf. There being no other business, the Chair thanked members and all those present for their participation, and the meeting was adjourned at 13.00.

Documents

Pub:1	Agenda for Publications Committee
Pub:2	Review of ICES Publication Activities in 1999/2000
Pub:3	<i>ICES Journal of Marine Science</i> : Editors' Report for 1999/2000
Pub:4	<i>ICES Journal of Marine Science</i> : Academic Press Publisher's Report for 1999/2000
Pub:5	<i>ICES Cooperative Research Report</i> series: Editor's Report for 1999/2000
Pub:6	<i>ICES Identification Leaflets for Plankton</i> : Editor's Report for 1999/2000
Pub:7	<i>ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish</i> : Editor's Report for 1999/2000
Pub:8	<i>ICES Techniques in Marine Environmental Sciences</i> : Editor's Report for 1999/2000

REPORT OF DELEGATES MEETING

The Delegates Meetings were chaired by Scott Parsons, President of ICES, on the following days (with the exception of Tuesday 3 October when the morning session was chaired by the First Vice-President):

Wednesday 27 September	16.00–18.00
Friday 29 September	08.30–12.30
Monday 2 October	08.30–17.00
Tuesday 3 October	08.30–17.30
Wednesday 4 October	08.30–15.00

The **General Secretary** took a roll-call of Member Countries for each session. All Member Countries were represented, together with the General Secretary. The Chair of the Consultative Committee, the Professional Secretaries, and Jan Thulin (GEF Coordinator) attended appropriate sessions.

The **President** opened the first session of the Delegates Meeting by greeting all Delegates. He welcomed several new Delegates and Acting Delegates.

The Revised Draft Agenda was adopted with the addition of one item under Item 28 regarding the distribution of ICES Documents.

Agenda Item 1 **PROGRESS REPORT ON ADMINISTRATION**

The **General Secretary** presented Doc. C.M. 2000/Del:2, drawing the Delegates' attention to the changes that had been made in the list of Delegates. He also drew attention *inter alia* to cooperation that had taken place with a number of other organisations, including OSPAR, the North Sea Conference Process, HELCOM, NEAFC, the EEA, IOC, and EC DG-Fish. With regard to the latter organisation he informed the Delegates that agreement (by way of an exchange of letters) specifying the terms under which the two organisations would cooperate had now been concluded. The agreement, in line with Memoranda of Understanding between ICES and other Commissions, specified the scope and the format of the advice requested by the EC, and the terms under which ICES costs would be recouped.

The **General Secretary** briefly described several issues which would be dealt with in more detail under other Agenda items.

Agenda Item 2 **ELECTIONS AND APPOINTMENTS AT THE 2000 ANNUAL SCIENCE CONFERENCE**

The **President** drew attention to Doc. C.M. 2000/Gen:3 which contained information concerning the election of four Science Committee Chairs, and

election of the Chair and Vice-Chair of the Consultative Committee which would take place during the meeting. The times and venues for these elections were noted.

Agenda Item 3 **ELECTION OF PRESIDENT, FIRST VICE-PRESIDENT AND THREE VICE-PRESIDENTS**

In drawing attention to Doc. C.M. 2000/Gen:3, the **President** noted that he would complete his three-year term as President on 31 October 2000. The Council will elect a new President from among the Delegates at this Statutory Meeting. In addition, Pentti Mälkki, First Vice-President (Finland) would complete his three-year term as First Vice-President on 31 October 2000. The Council would elect a new First Vice-President at this Statutory Meeting from among the Delegates. Niels Axel Nielsen (Denmark), Graça Pestana (Portugal), and Alfred Post (Germany) would also complete their three-year terms as Vice-Presidents on 31 October 2000. The Council would therefore elect three new Vice-Presidents at this Statutory Meeting from among the Delegates.

The elections were conducted in accordance with the usual process, as stipulated in the Rules of Procedure:

Pentti Mälkki (Delegate of Finland) was elected President of the Council for a three-year term commencing 1 November 2000. **Pentti Mälkki** thanked his fellow Delegates for their support, pledged to actively conduct his duties, and looked forward to working with the new Bureau.

The **President** noted that Pentti Mälkki would conclude his three-year term as First Vice-President of the Council on 31 October 2000. As his successor, Michael Sissenwine (USA) was elected as First Vice-President for a three-year term commencing 1 November 2000. **Michael Sissenwine** thanked his fellow Delegates for their support and pledged to actively conduct his duties.

The **President** noted that Niels Axel Nielsen, Graça Pestana, and Alfred Post would conclude their three-year terms as Vice-Presidents of the Council on 31 October 2000. In their place, the following three Vice-Presidents were elected for three-year terms commencing 1 November 2000:

Rudy De Clerck (Belgium)
Joe W. Horwood (United Kingdom)
Eduardo Lopez-Jamar (Spain)

Following their election, **Rudy De Clerck, Joe Horwood, and Eduardo Lopez-Jamar** each thanked their

fellow Delegates for their support and pledged to actively conduct their duties.

The **President** wished the incoming President and the new Vice-Presidents-elect every success during their term of office, noting that they would hold office on the special occasion of the 2002 Centenary.

The **President** then noted that Jakob Jakobsson will retire from the Council after the present meeting. He had been associated with ICES since 1959 and had been active in many Working Groups, especially concerning herring. He then served as Vice-President, First Vice-President, and ultimately as President of the Council. He had been a very distinguished President of ICES and had published numerous scientific papers. Speaking on behalf of the entire Council, the **President** regretted that Jakob Jakobsson will no longer be a Delegate. He extended to Jakob Jakobsson very warm wishes for the future.

Jakob Jakobsson expressed his regrets at leaving the Council. He said that working with ICES had been a wonderful experience and he hoped that he had been able to contribute to its work.

Agenda Item 4 APPOINTMENT OF CHAIR AND TWO MEMBERS OF FINANCE COMMITTEE

The **President** referred to Doc. C.M. 2000/Gen:3, noting that the Council was obliged to appoint a new Chair and member of the Finance Committee, as Alfred Post would complete his three-year term as member and current Chair of the Finance Committee on 31 October 2000. He also noted that another member of the Finance Committee Jan Thulin, had ceased to be a Delegate. A new appointment would therefore be required to replace him. He requested that Delegates give their approval to the Bureau's proposal that:

- a) Tomasz Linkowski should be appointed as the new Chair of the Finance Committee to replace Alfred Post for the forthcoming period;
- b) Robert Aps (Estonia) and André Forest (France) should be appointed as members of the Finance Committee.

The **Council approved** the Bureau's proposal, and expressed its gratitude to Alfred Post and Jan Thulin for their service as Chair and member, respectively.

Agenda Item 5 APPOINTMENT OF CHAIR AND MEMBERS OF THE PUBLICATIONS COMMITTEE

The **President** referred to Doc. C.M. 2000/Gen:3, noting that the Council was obliged to appoint a new Chair and all members of the Publications Committee, as the Chair (Peter. Boyle), Bogi Hansen, François Gerlotto, and Peter Matthiessen would complete their three-year terms on 31 October 2000. The Bureau proposed that Peter Boyle's term as Chair be extended for one year to ensure continuity, and that the new members should be Frederik Arrhenius (Sweden), Alicia Lávin (Spain), and Bill Turrell (UK).

The **Council approved** these proposals.

Agenda Item 6 REPORT OF THE BUREAU WORKING GROUP ON THE ADVISORY PROCESS

The **President** recalled last year's discussion by Delegates concerning proposed modifications to the Advisory Process. He noted that CGADV had made a detailed proposal regarding this, but there had been no clear consensus. This had led to the establishment of a Sub-Group of the Council, the Bureau Working Group on the Advisory Process, which was established to further advise on modifications to the ICES Advisory Process.

The **President** then introduced Doc. C.M. 2000/Del:10, the Report of the Bureau Working Group on the Advisory Process, and drew specific attention to its major conclusions and proposals. The principal features of the proposal were the establishment of two new permanent Committees, the Management Committee for the Advisory Process (MCAP) and the Advisory Committee on Marine Ecosystems (ACE). He also drew attention to Doc. C.M. 2000/Del:9 which contained proposed changes in Rules of Procedure 26, 28 and 29. The document also included sections of texts describing, by way of Resolution, the decisions required by the Council regarding Advisory Committees. He explained that this latter Document was based on Doc. C.M. 2000/Del:10, but differed in some details, as this was based on the outcome of the Bureau considerations of Doc. C.M. 2000/Del:10.

In summing up his presentation, the **President** explained that the proposals in Doc. C.M. 2000/Del:10 were the consensus view of the Bureau Working Group. The Bureau Working Group had also agreed that change is needed, and that it is needed now. The proposals were the best that could be put forward, bearing in mind the many constraints, and the need for action now.

The **Delegate of Ireland** asked how these additional Committees would be serviced by the Secretariat. In response the **President** said that the Bureau Working Group had made no proposals on that issue. For the moment, appropriate tasking within the Secretariat could deal with that matter as necessary. The Chair of CGADV explained that the proposals would require no additional Secretariat resources as the total number of meeting days would remain unchanged.

The **Delegate of Canada** asked for clarification of the proposed strategic and tactical peer review processes. As a member of the Bureau Working Group the US Delegate, Mike Sissenwine, gave the necessary explanation based on Annex 3 of Doc. C.M. 2000/Del:10, and pointed out that the precise details of how this will work will be the responsibility of MCAP.

The **Delegate of Sweden** asked for clarification on the work of ACE and was informed that this Committee would be in the forefront of developing ecosystem advice; it might subsequently become more involved in the production of more routine products. Examples of the kind of work ACE would be involved in would include (a) seabird-fisheries interactions, (b) impact of closed areas, (c) impact of marine mammals in fisheries, and (d) ecosystem impacts of fishing.

The **Delegate of Belgium** welcomed the Report and expressed full support for its proposals, especially the recommendations concerning peer review. He expressed concern about potential budgetary and resource implications of the proposed peer review process, however.

The **Delegate of Norway** pointed out that integrated advice will be a feature in the coming years. He asked about the likely membership of ACE, and suggested that it would be virtually the same as that of ACME. Why not then make ACE a sub-committee of ACME? He doubted if the necessary resources of expertise could otherwise be found. The **President** envisaged that some existing members of ACFM may be nominated to ACE as well. He anticipated that additional expertise would be forthcoming.

The **President** noted that the problems addressed in this report had been discussed in the Council for about five years and had been considered by several Groups. Last year the CGADV had reported that there were substantial problems in the advisory process and had made proposals for substantial improvements in the advisory structure. The Bureau Working Group had examined the issues and proposed a new advisory structure, recognising that this is not a perfect solution but that significant change is needed. Last year, the Council also agreed that changes were needed. Accordingly, early this year a group composed of Delegates holding a spectrum of views met as the Bureau Working Group, and prepared the proposals contained in Doc. Del:10. Through goodwill and hard work, this group achieved consensus. This report provides a

change that will lead to an evolution of the advisory process.

The **Delegate of Germany** noted that the report calls for a dynamic membership of ACE and he asked how this dynamism will be achieved. The President replied that there will be nominated members of each committee, but that there will also be the possibility of adjusting the membership based on the specific requests to be covered at each meeting.

The **Delegate of Estonia** supported the aim of strengthening the environmental and ecosystem advisory process. However, until now ACME has been responding to issues relating to ecosystems. Under the new structure, ACE will deal with these ecosystem issues. However, he was not sure that there were additional experts on ecosystems available, beyond those on ACME. He thus questioned the benefit of fractionating the present ACME. He saw a danger in separating these two bodies and separating the areas of responsibility.

In response to this question, the **Delegate of the UK** stated that ACME had not been functioning well because the agendas of ACME had been very broad, and experts on all aspects of its agenda had not been available. In introducing this extra committee, it was recognised that there are experts on ecosystem issues that are different from the present members of ACME and ACFM.

The **Delegate of Denmark** stated that the Bureau Working Group's proposals represented the most pragmatic solution because it did not appear possible to create a single committee with flexible membership to handle all advisory issues. In addition, in order to manage these three committees a coordinating committee, MCAP, would be created. This is a step that was felt to be acceptable to more people than a single committee with flexible membership, and that ultimately it would be the best solution.

The **Delegate of Sweden** was concerned with the issues of quality of advice and the timeliness of the advice. A third issue was the credibility of the advice to the fishing industry. He generally felt that Doc. C.M. 2000/Del:10 was a good report. However, he questioned the need for the establishment of a new committee on ecosystem advice. He felt that the existing two committees could deal with the great majority of requests that ICES receives, and if there is a request that these committees could not handle, then an *ad hoc* committee should be established for individual special requests. He stated that there were national commitments at the highest political level to implement ecosystem measures in fisheries management. Thus it would seem strange to create a special committee to develop advice on ecosystem issues. He proposed adding the term "in an ecosystem context" to the remits of both committees so that their work would be conducted in this context. He noted the importance of retaining

the confidence of the fishing community. In terms of the alternative proposals contained in the BWG report, he felt that ultimately the establishment of a single committee with flexible membership would be the best route. However, the model proposing a joint meeting between ACFM and ACME would also be a good interim solution.

The **President** accepted the points raised by the Delegate of Sweden. Many of these points were raised by the Bureau Working Group itself. He noted that given the extremely heavy workload of ACFM and the expertise needed to handle ecosystem questions, it would be difficult to add further work to ACFM. Thus, in recent years the Council had decided to give the ecosystem requests to ACME as it was felt that ACME was not so overloaded. This had been done, and there had been some success, but it was felt that this did not go far enough. Thus the Bureau Working Group felt that there was a need for change and that in order to advance on the ecosystem approach, new experts would be required to provide the knowledge needed.

In response to the Swedish Delegate, the **Delegate of Norway** stated that there was not a lot of integrated research in ICES Member Countries. The Bureau Working Group report had noted that it was difficult to provide integrated advice without integrated research, and it has been difficult to integrate research on the national and institute level. The Advisory Committee on Ecosystems might be able to lead this process of integration in research, by developing means of doing so. He noted that under the new proposal, the MCAP will replace CGADV in coordinating the advisory work. However, he felt that it would take about two decades to really implement integrated ecosystem advice.

The **Chair of CGADV** agreed with the Delegate of Norway that the changes in committee structure will only be of minor help until the research is actually integrated. For example, in evaluating the effects of a closed area, expertise will be needed on fisheries, habitats, and ecosystems issues. This will require the participation of university-type institutes. The experience gained in several test cases shows that much greater cooperation is required, almost on a daily basis, between the newer scientific fields. Thus, we cannot look at ecosystem advice as a final step in the process, but rather integration is needed at all stages of the process. This will take place during the next decade and ICES should manage this process from the beginning. This will not work if there are separate Chairs of two independent Committees with individual identities to try to achieve this cooperation. Thus, in order to formalise this cooperation, an MCAP is required.

The **President** emphasised that the new MCAP would replace the CGADV and thus it was not a new group or a new level. However, MCAP would have an enhanced mandate and wider powers than CGADV.

The **Delegate of the Netherlands** noted that in going through the process of trying to improve the advisory process, the Bureau Working Group had taken into account many diverse opinions about the structure and had arrived at a proposal. A decision would have to be made at this meeting. In reports of the CGADV and the Bureau Working Group, there were a number of problems that needed to be tackled and these were all included in the proposal. However, some basic issues still needed to be taken into account in regard to the advisory process. The issue of integration of scientific research was one example, as mentioned by Norway. The scientific side of ICES should be asked to address these issues. If the nineteen Member Countries were viewed together, it would be seen that a certain pool of people were available for the advisory work; this pool would not be changed by a new structure. Thus, we would have to tackle these basic issues, which would not be changed by a new policy, and the limitations in available people would remain the same. The suggestions for more meetings, more peer reviews, etc., were good, but they would require resources to carry them out.

The **President** agreed with the fundamental point of the need to have adequate numbers of experts and financial resources at the national level. The Bureau Working Group had acknowledged these issues, but felt that they could not handle them in its report. However, despite these fundamental problems, it was felt that there is a need to move forward with this proposal as one step in the process.

The **Delegate of Latvia** also saw this as a step in the process of reconstruction of the advisory process, which will be more evolutionary than revolutionary. Theoretically, the proposal for three advisory committees could take some of the workload from the ACFM and ACME, but he did not feel that this decrease in workload would be very large, as there were very few requests for advice on ecosystem issues. He was concerned about the potential availability of experts on ecosystem issues, but it would not take much work away from the existing committees as probably many of the same experts from ACFM and ACME would need to take part also in ACE. For a small country like Latvia, there were very few experts and the best of them were already on ACFM and ACME. However, the Council should adopt the proposals and see how they work.

The **Delegate of Iceland** felt that it was important to note that we are dealing with an issue of long-standing frustration. The problems have been discussed for many years but the Council had not taken any steps. It was necessary to make a decision now. The issues of quality and timeliness of advice were very important, as is the credibility of the advice to the fishery clients. Notwithstanding the fact that there were many potential ways of achieving the objectives, adopting the

proposals will send a signal to the clients that ICES took seriously the role of providing ecosystem advice. This new Committee might also serve to stimulate the work on ecosystem and integrated advice, and thus assist in the creation of a new branch of science. He supported the new structure proposed by the Bureau Working Group.

The **Delegate of Belgium** agreed with many of the previous comments. He was in favour of the new committee (ACE), but he wished to avoid chaos in the implementation of this process. Although the processes and interactions involved were not well understood, there was a need for providing advice on ecosystem issues. But we needed to avoid chaos in the process or in the results, so we should start carefully, with a limited number of terms of reference for ACE. For ACFM and for ACME we have the usual clients, but he questioned who are the clients for this new advice, and who would pay for it.

On the specific question of who were the clients for integrated advice, the **President** pointed out that there have been several requests that required integrated advice, such as the sandeel request from the EU and some of the OSPAR requests.

The **Delegate of the UK** stated that there is no presumption that there will be an influx of new questions in this area, but that there had been past requests that would be covered, such as the review of the Lindeboom and de Groot report.

The **Delegate of Estonia** stated that this is an evolutionary process. There needs to be an evolution of integrating science at the national level. Our existing clients are changing their orientation already, and would develop more requests on ecosystem issues in the future.

The **Delegate of Canada** supported the proposal before Council as the best step to take at this time. The report covered many other steps in addition to the creation of a new committee, including peer review and other actions that need to be taken. For ACME, there were a very wide-ranging number of issues and it had been difficult for ACME to find the time to explore some of the very important issues. Thus, until we had moved to a more integrated process, it would be useful to have a committee to handle issues such as ecosystem effects of fisheries, climate change, etc., more specifically.

The **Delegate of France** agreed that transparency and credibility were important for ICES. The commissions want integrated advice. The Common Fisheries Policy meant that quotas and TACs would be with us for a long time. However, there was a need to integrate the advice. The structure proposed today would not solve all the problems; ACFM would still have too much work and creating a Vice-Chair of ACFM would not

help very much. However, after discussing the advisory process for five years, we must now come to an agreement. Even though the details had not been worked out, this structure came closest to providing what can be agreed and France would support.

The **Delegate of Germany** endorsed the comments by the Delegate of Iceland and stated that Germany would agree to this proposal. As Chair of the Finance Committee, he pointed out that the new structure would have financial implications, and proposed that they be considered later.

The **Delegate of Ireland** supported the proposal on the grounds that this change would bring forward new science and would stimulate an integrated approach. In terms of potential customers, he felt that there were a number of possible new clients, given the national requirements in relation to biodiversity, coastal zone management, and protected areas. Links to institutes charged with implementing measures in regard to these issues should be forged.

The **President** anticipated that ICES would receive requests concerning these newer areas and the proposed structure would create the flexibility for ICES to respond to them.

The **Delegate of Spain** commended the Bureau Working Group for its work and its proposals. He agreed to the approach to more integrated advice and the development of an ecosystem approach to management. However, given the lack of expertise on these issues in Member Countries, he supported Belgium in suggesting that this process should be implemented slowly. Delegates should promote ecosystem research.

The **Delegate of Poland** shared the doubts of the Delegates who expressed reservations about the proposal, especially in terms of the limited expertise available on ecosystem issues. However, he agreed that ICES should send a signal to the outside world that ICES will apply an ecosystem approach to advisory work. Thus, despite reservations, he felt that there was no choice but to accept this proposal, which is crucial for the future of ICES.

The **Delegate of Portugal** supported the Bureau Working Group's proposals and noted that there was a great deal of work ahead for ICES.

The **Delegate of the UK** supported the proposals. He commented on the level of resources available, as the resource base had declined in recent years despite the growing need for ecosystem advice. The high-level management committee would need to realise that this is a key problem. It would need to assess the resources available in the national laboratories and determine how these could best be used to provide quality advice. Most people realised that there was a need for significant change. He said he had been taken aback by the

critical comments of the Swedish Minister of Fisheries at the 1999 ASC. UK fishermen are also dissatisfied with ICES advice. In looking at the new ACE, he stated that this would tackle the problem of ACME having too wide an agenda, and would allow a separation of contaminants issues from ecosystems issues. Although there may be many aspirations for advice from ACE, it would mainly respond to requests from paying clients and the level of these requests could be anticipated. He concluded by thanking the President for his work on this issue.

The **Delegate of the USA** also supported the proposal. He noted the reservations expressed, but stated that there were elements of the proposals that would accommodate these reservations. He also thanked the President for leading this process.

The **Delegate of Denmark** also supported the proposals. He noted that several Delegates had commented on the need for more ecosystem research, more experts on relevant subjects, and the requirement that Delegates should support needed changes in their home countries. This was clearly very important. These changes had been required for a long time. Denmark supported this proposal because the present system was too complicated and did not stimulate the development of ecosystem-oriented work. He felt that national governments would be very willing to support the new Working Groups to be developed under ACE on ecosystem issues. These steps were necessary to make progress, keeping in mind the need for underlying changes required at the national level.

The **Delegate of Russia** supported the comments by the Delegates of Norway and Latvia. He noted that there would be problems in finding experts with the relevant expertise.

The **Delegate of Finland** considered that ecosystem issues would be even more important in the future and that they were not adequately handled in the present advisory committees. Thus, Finland supported the proposals.

The **President** summed up, noting that there were many reservations that had also been shared by the Bureau Working Group. But he commended the Bureau Working Group for developing a proposal that was a positive step forward, recognising the need for further evolution of this process. It appeared that there was overwhelming support for the proposals and for the need to move forward on this issue, and he thanked the Delegates for this.

Agenda Item 7 CHANGES IN RULES OF PROCEDURE 26, 28 AND 29

The **President** stated that if Delegates had any suggestions for improvements in the text of these new Rules of Procedure that would not fundamentally alter the

consensus agreed on this issue, he would consider them. As the Advisory Committees are covered by the Rules of Procedure, it is necessary to change these rules to implement the decisions on the new advisory structure. He then explained the changes in the Rules of Procedure contained in Doc. C.M. 2000/Del:9. He pointed out that the Rules of Procedure had been changed in 1997 to provide greater flexibility in the structure of the Science Committees. The new changes would permit a similar flexibility in establishing Advisory Committees. In association with these changes in the Rules of Procedure, the Document contained a Council Resolution that provided the details of the structure and function of MCAP and the Advisory Committees.

He noted that changes to the Rules of Procedure required a two-thirds majority of the Council in order to be adopted. If these new Rules of Procedure are adopted, then the Resolution associated with these Rules of Procedure would be considered for adoption by a simple majority.

At the Delegates meeting on 29 September the **President** invited Delegates to provide him with possible changes in the wording of Doc. C.M. 2000/Del:9. As a result of this a new item (i) (c) was inserted and after some lengthy discussions some other editorial changes were made. However, a consensus was reached and Doc. C.M. 2000/Del:9, Revision 3 was **adopted**.

Agenda Item 8 APPOINTMENTS OF CHAIRS OF MANAGEMENT COMMITTEE FOR THE ADVISORY PROCESS (MCAP) AND ADVISORY COMMITTEE ON ECOSYSTEMS (ACE)

The Bureau **proposed** and the Council **approved** the following nominations:

Hein Rune Skjoldal (Norway) as Chair of the Advisory Committee on Ecosystems (ACE).

Gerd Hubold (Germany) as Chair of the Management Committee for the Advisory Process (MCAP).

Since Hein Rune Skjoldal was at present the Chair of the Advisory Committee on the Marine Environment, and since ACME had not had any opportunity to select a replacement Chair, the **Council agreed** that the **President** would appoint a Chair for one year. ACME would then select a new Chair for appointment by the Council.

Gerd Hubold thanked the Council for his appointment and hoped for the support of the Council and the Bureau.

The **Delegate of the UK** welcomed the incoming Chairs and made the following statement: “The UK view has been, and remains, that significant and urgent changes are needed to the advisory process. The changes agreed to during this week are in the UK view the minimal response by ICES which is needed to address the issues in the advisory process. The UK is concerned that if the new ICES process does not address these problems with vigour, ICES risks that Member Countries will be seeking solutions outside ICES, not unlike our discussions over the NASCO issues earlier during this meeting. The UK therefore urges the new MCAP to recognise the importance of its tasks”.

Agenda Item 9 PROPOSAL TO CHANGE THE FINANCIAL AND OPERATIONAL ICES YEAR

The **President** introduced Doc. C.M. 2000/Del:8, pointing out that last year the Council had given approval in principle that Rule 17 of the Rules of Procedure should be changed so that the ICES financial and operational year should match the calendar year, instead of 1 November to 31 October as at present. In Doc. C.M. 2000/Del:8 the Bureau proposed a Resolution which, after some small editorial changes, was **agreed by the Council** as follows:

1. The Council's financial year should run from 1 January to 31 December, with effect from 1 January 2001.
2. The financial year 1999/2000 be extended to run from 1 November 1999 to 31 December 2000.
3. The Council's running expenses for November and December 2000 be funded by a short-term encashment of bonds.
4. Rule 17 of the Rules of Procedure be changed to “The financial year of the Council shall be from 1 January to 31 December”.
5. Rule 30(I) of the Rules of Procedure be changed to “The Chair of each of the Committees established according to Rules 24, 25, 26, 27 and 28, and the Vice-Chairs of the Consultative Committee and of ACFM shall be elected for a term of three years, and shall assume office on the first day of January next following his/her election; he/she shall not be eligible for re-election for the immediately succeeding term”.
6. The period of office of Chairs which would otherwise terminate on 31 October 2000 be extended to 31 December 2000.

Agenda Item 10 REPORT ON ACCESSION OF LITHUANIA TO THE ICES CONVENTION

The **General Secretary** informed Delegates that the accession of Lithuania still awaits ratification by the Lithuanian Parliament.

Agenda Item 11 APPLICATION BY CHILE FOR OBSERVER STATUS

The **General Secretary** informed Delegates that the ICES Secretariat had received a letter dated 24 November 1999 from Mr Juan Manuel Cruz, Under-Secretary for Fisheries in Chile, with the request that the Instituto de Fomento Pesquero (IFOP), Valparaíso, be granted Scientific Observer Status. The main responsibility of IFOP had been to develop scientific research in the fields of stock assessments of fisheries, total allowable catch, biological points of reference, biological sampling of catches, oceanographic conditions, direct assessment of stocks by using fishing and research vessels, and various ecological studies. IFOP had also developed a programme in aquaculture, including algal blooms, technology for species reproduction and farming.

The **General Secretary** explained that the Bureau had considered the application by Chile, and in light of the impressive credentials of the Instituto de Fomento Pesquero (IFOP), had found that the application is fully in accord with the requirements laid down in Doc. C.M. 1995/Del:11(Revised). The Bureau therefore recommended that Scientific Observer Status be granted to IFOP.

Following several expressions of support from a number of Delegates, the Council **agreed**, with no dissent, to grant the Instituto de Fomento Pesquero (IFOP), Valparaíso, Scientific Observer Status.

Agenda Item 12 ARRANGEMENTS FOR FUTURE ANNUAL SCIENCE CONFERENCES AND STATUTORY MEETINGS: 2001 (NORWAY), 2002 (DENMARK; ICES CENTENARY), 2003 (ESTONIA), 2004 (SPAIN)

It was decided to discuss Agenda Item 15 under this Item as well.

The **General Secretary** introduced Doc. C.M. 2000/Del:16 pointing out, in particular, that for the ASC in 2001 we have a very notable and noteworthy speaker for the Open Lecture, the former Norwegian Ambassador to Denmark, His Excellency Thorvald Stoltenberg. The title for his lecture will be “Our Common Future: A Political Perspective on the Ocean and Related Issues”.

For the 2002 ASC it was proposed by the Bureau that a small Centenary Committee should be established, chaired by Pentti Mälkki, together with the Delegates of Norway and Denmark. The General Secretary and the Chair of the Consultative Committee should take part in the planning activities as well. The Council **agreed** to this proposal.

With regard to the Centenary Celebrations in 2002, the **Delegate of Iceland** advocated that ICES should seek to get politicians and authorities in the Member Countries to make commitments to research and towards strengthening Member Countries' institutions. Planning should start immediately if such a Ministerial exercise were to be achieved in 2002.

In regard to the 2003 ASC and Statutory Meeting in Tallin, the Delegate of Estonia confirmed that the dates would be 22 September to 1 October.

The **Delegate of Spain** confirmed that ICES is invited to hold the 2004 ASC and Statutory Meeting in Vigo.

The **General Secretary** presented Doc. Del:11 (Revised), which indicated that a total of DKK 1.5 million had been paid, or pledged, to the Centenary Fund. The stipend and expenses involved in the *History of ICES* book project came to DKK 700,000, leaving a net balance in the Centenary Fund of DKK 800,000.

As also described in Doc. C.M. 2000 Del:11 (Revised), Friday 4 October 2002 would mark the Centenary Day at the Annual Science Conference. Preliminary plans for that day included a morning event at which a member of the Danish Royal Family would be present, and an afternoon meeting (at Ministerial, Director, or Ambassador level) at which an event such as the signing of a letter of Understanding (or a Declaration) based on the Strategic Plan is under consideration. In the evening, an appropriate cultural event such as a special performance at the Royal Theatre is envisaged. The possibility of organising a science event is being investigated, such as visits to research vessels of various ICES Member Countries (berthed at Langelinie) and a hands-on exhibition arranged by the Danish Science Festival.

Agenda Item 13 DEVELOPING MEMORANDA OF UNDERSTANDING

The **General Secretary** introduced Doc. C.M. 2000/Del: 13, and described the two meetings which had taken place with the European Environment Agency. Noting the favourable disposition of the EEA to the principle of cooperation with ICES, he stated that development in the immediate future seemed likely to be along practical lines (i.e. joint work of mutual value to both organisations), which could then lead on to a Memorandum of Understanding.

The **Delegate of Belgium** advised caution, and recommended that ICES should first specify a long-term policy concerning data. The situation in Europe was changing in that regard, and it was not certain whether ICES or the EEA would be the main contact for marine environmental data in the future. It would be preferable, he said, for that responsibility to remain with ICES.

The **President** pointed out that the handling of ICES data was a major policy item for the Bureau, which had already authorised the creation of a Database Manager post in the Secretariat, together with a staff reorganisation plan as proposed by the General Secretary.

The **Delegate of France** supported the Belgian view, noting that the role of the EEA in marine science would become weaker as a result of the EEA's policy decision to combine marine environment data with freshwater.

The **US Delegate** drew attention to the extensive commonality of interest between ICES and ICCAT, and recommended that an initiative similar to that taken towards the EEA would be appropriate.

The **President** expressed satisfaction with progress under this agenda item, and anticipated a harmonisation with the EEA within two years or so. The **Council endorsed** these views.

Agenda Item 14 REPORT ON 2000 MEETING OF ICES/COMMISSIONS WORKING GROUP ON COOPERATIVE PROCEDURES (WGCOOP)

The **General Secretary** reviewed C.M. Doc. Del:15 and summarised the results of the meeting which was held in February in London.

The **Delegate of Norway** sought some clarification regarding the core activity of ICES (with reference to some points made at the Open Forum on 26 September). Does the concept that the core activity is the basic science still apply or is it the so-called advisory function? In reply the **President** confirmed that the definition of core activity had not changed. It is recognised that ICES also has a talent and expertise to perform the very vital and important advisory function, and that under the Memorandum of Understanding we agree to do this in a certain way.

The **Delegate of Finland** stated that it was unfortunate that no representative from HELCOM had participated in either WGCOOP or the 12th (Environmental) Dialogue Meeting. This suggested that the terms in the MoU must be clarified regarding the development of the cooperation with the client organisations. Within

the next two years some of the MoUs will be subject to review and, when this takes place, it would be necessary to hold bilateral discussions at Secretariat level regarding the strengthening of working links between the environmental Commissions and ICES.

With regard to integrated advice and the new ICES Advisory Structure he pointed out that the MoUs with the environmental Commissions are written in general terms. It may be necessary to clarify how integrated advice will appear, because environment commissions may interpret this in a different way from the fisheries commissions.

The **President** agreed that there would be a need to have further dialogue with HELCOM, because the relationship with ICES is not the same as that between ICES and OSPAR. Such dialogues should be carried out at a senior level and he urged the new President to make it one of his priorities. Pentti. Mälkki confirmed that this was on his action list.

The **Delegate of Norway** concurred with the President's comments. He said that as the requests from, and the work processes for, the environmental Commissions were significantly different from those of the fisheries Commissions, it thus required a special approach. Any wrong understanding must be avoided right from the start, he said.

The **President** thanked Mr Griffith for his presentation and the superb manner in which he had chaired this Working Group on Cooperative Procedures over the past several years. He also underlined that the Group expressed interest in pursuing other topics on a more practical working level in terms of the relationship between ICES and the commissions, and this should be encouraged.

Agenda Item 15 REPORT ON PLANNING AND FUNDING FOR THE ICES CENTENARY

It was decided that this Agenda Item should be discussed under Agenda Item 12.

Agenda Item 16 REPORT ON THE HISTORY BOOK PROJECT

Introducing Doc. Del:12, the **General Secretary** gave a summary account of the Secretariat's approach to five publishing firms. The Bureau had agreed that the choice lay between two publishers, and had authorised the General Secretary to pursue negotiations with Johns Hopkins University Press. The delivery date identified by ICES would be May 2002. The author, Helen Rozwadowski, had confirmed that her work remained on schedule to complete her manuscript by the end of November or December 2000.

The Council **endorsed** the Bureau's recommendation.

The **Delegate of France** requested that the History Book should also contain a French version of at least the Foreword, Summary and Table of Contents, in order to promote the book in France. This request was favourably received by the Council, and the President and the General Secretary assured the French Delegate that this would be done.

Agenda Item 17 STRATEGIC PLAN - NEXT STEPS

The **President** being unavailable for this Agenda Item, the **First Vice-President** took over the chair.

At the request of the President, the **US Delegate**, in his capacity as Chair of the Bureau Working Group on Strategic Planning, had convened an *ad hoc* group to develop some ideas regarding follow-up to the submissions received and the views expressed at the Open Forum. He then presented C.M. Doc. Del:14, which he described as a response to the views expressed at the Open Forum and to the comments made by Delegates at the sessions immediately preceding the Open Forum.

Doc. Del:14: ICES STRATEGIC PLAN-NEXT STEPS

1. Key Issues About the Current Plan

1. Balance

- 1.1 Fisheries – Ecosystems
 - Advice – Research
 - Regional – Global
 - Is the plan too ambitious?

2. Length and Amount of Detail

- Is it too long?
- Is it too general?

3. Partnerships

Recognise that members carry out programmes and, hopefully, ICES adds value

Defining ICES' niche relative to other international organisations

4. Should ICES include social and economic sciences in its portfolio?

5. Role of the fishing industry and other interest groups?

- Outreach
- Transparency

2. Revising the Strategic Plan

1. One or two Documents

- Strategic Plan
- Action Plan

2. Preparation of the Plan

- Internal ICES Group

Inclusion of External Interests?
Fishing Industry?
Environmentalists?
Other international organisations?

3. Timing

Strategic Plan for adoption in Oslo (2001)?
Action Plan – 2001 or 2002.

The **Delegate of Canada** found that the summary given was a good reflection of the discussions. He felt, however, that there had been an uneven representation from the ICES clients at the Open Forum, especially from the environmental side, and thus he did not consider that the discussions had necessarily reflected what all the ICES clients might think about the Strategic Plan.

The **Delegate of the UK** pointed out that there had been an extensive consultation in the UK on the Strategic Plan with various UK authorities, administrators and representatives of the fishing industry. He found that the five topics were a very good headline summary of the key issues that should be addressed, and he supported this interpretation very much.

The **Delegate of Sweden** expressed concern regarding who would be using the Strategic Plan, and how. He stressed that it could be of tremendous value to the national institutes in the Member Countries when fighting against cutbacks in funding, but it should therefore identify priorities, for guidance.

The **Delegate of France** shared the surprise expressed by others that some participants in the Open Forum perceived ICES as being mainly concerned with fisheries science and the provision of advice on fisheries. He said that it was evident that the environment clients should also be mobilised. He agreed that Doc. Del:14 accurately summarised the Open Forum discussions. He suggested that it should be more specific regarding international databases, however, and this item should be included in key issue C (Partnerships).

The **Delegate of Norway** supported his French colleague. He agreed that the debate had been biased towards fisheries issues, and suggested that this was a reflection of the imbalance in the participation in the Open Forum. He pointed out, however, that there had been extensive consultation in Norway and the same points had been raised. The difficulties lay mainly in the way the Strategic Plan was written – the arguments were all there, but they were not clearly evident. Similarly, the points about socio-economic considerations (in reality a basic science exercise) were not clear and this had caused confusion.

The **Delegate of Ireland** also agreed that Doc. Del:14 accurately reflected the Open Forum discussions. She suggested that the participation of environmental managers in the Dialogue Meeting on 7–8 September, not

long before the Open Forum, would have contributed to the small participation of people from the environment area. Comments made at that Dialogue Meeting should be taken into account when revising the draft Strategic Plan.

The **Delegate of Spain** supported Doc. Del:14. He agreed that the role of national research organisations must be stressed, since they are the entities that do the research. He pointed out that the plan could be very useful for them, because it could identify and prioritise future research lines. That should be included in the Action Plan, however.

The **Delegate of Denmark** agreed that Doc. Del:14 is a good summary of what was actually an input into the Strategic Plan process. Referring to the imbalance in the participation in the meeting, he issued a note of caution not to regard ICES as being a parallel environment and fisheries organisation. Because if we look at Doc. Del:18 (the draft report of the Environmental Dialogue Meeting), it could be seen that we have relatively few requests for environmental advice. Basically we are going to rewrite our strategy: “how does ICES see itself?”. It is obvious that the fisheries side really needs a broad and possibly broader basis for fisheries advice. But the draft Strategic Plan did not make it clear to them that the exploitation of living marine resources was at the core of ICES’ intentions.

The **Delegate of the Netherlands** drew attention to the written comments the Dutch Delegation had made earlier in the year. The Netherlands was concerned that the Draft Strategic Plan seems a bit too ambitious. He supported the idea of splitting it into a Strategic Plan and an Action Plan for, say, the next five years. We should not lose sight of our “core business”. Furthermore, the inclusion of socio-economic sciences is a very important issue. The way it was written was confusing, and he agreed with Norway that we would have to redraft this section. Concerning the inclusiveness, the Dutch Delegate felt that ICES should develop a model of effective communication. This could be helpful for people in the Member Countries to follow – without necessarily getting round the table with all interest groups on every occasion.

The **Delegate of Belgium** supported the comments made by the Delegates of France and Ireland. He drew attention to the Five Strategies adopted by OSPAR which could be reviewed as a request for scientific advice, at least implicitly. Furthermore, if we want ICES to find its niche in the UN Commission on Sustainable Development, and in the UN Consultative Process on the Law of the Sea, we must be much more explicit regarding capacity building.

The **Delegate of Iceland** urged the Council not to devalue the debate by over-emphasising any imbalance in the discussion. Regarding the Swedish Delegate’s request for priorities to be identified in the Strategic Plan, he suggested that it would be more useful to

compile a compendium of the activities being undertaken in the Member Countries. He asked if the Working Group on the Strategic Plan had conducted such a survey.

The **Delegate of the USA** (as Chair of the Working Group on the Strategic Plan) said that no such survey had been undertaken. Relevant information had been provided by the Science Committees through the Chair of the Consultative Committee, who was also a member of the Working Group. Useful consideration might be given to the question of whether to revive, albeit in a different format, the annual "Administrative Reports" which used to be compiled about national activities.

The **Delegate of Norway** queried whether there really is an imbalance in the draft Plan between fisheries and the ecosystem. He pointed out that the ICES goal is to adopt an ecosystem approach towards fisheries and he supported the view expressed by the Danish Delegate. The Plan must be ambitious, he believed, although maybe the present draft was too long for the managers or the public at large. He said it was not clear to him what is the ICES position in regard to the role of the fishing industry and other interest groups. What interest groups are we talking about? Are we talking about non-governmental organisations and, if so, which organisations?

The **Delegate of Finland** stressed that ICES and the Member Countries must carefully consider how to avoid conflicts of interests which might arise when ICES scientific experts take part in Committees and sub-groups of the partner Commissions of ICES.

Regarding the question of balance the **Delegate of Estonia** advocated that the emphasis in a redraft of the Strategic Plan should be on research which underpins the advice. If we could clearly indicate that ICES is advancing the highest possible level of research, it would probably make it clearer for the clients that the resultant advice will also be of the highest possible quality.

The **Delegate of Finland** said that the next version of the Strategic Plan should stress that fish are part of the ecosystem. It should also be emphasised that good advice needs good science. The "humanity" element had aroused some resistance and might be amended in the next draft.

The **Delegate of Canada** identified, as a central question, the need for the Strategic Plan to clarify how we maintain our role in the year 2000. Are we primarily an organisation of scientific researchers, or is our main task to provide advice to our clients? The emphasis in recent years has been on the advisory function, and this was also pointed out during the Open Forum. He expressed serious concern at this, and stressed that if the scientists came to believe that ICES was only an organisation for presenting advice and was no longer a

valid forum for the exchange of research information, then perhaps they would no longer be interested in taking part in the Working Groups, bringing the danger that the structure of ICES would collapse.

The **Delegate of Denmark** stated that the question was rather one of whether ICES is perceived as embarking on a scientific programme that will not support the advisory activities which the managers are looking for. It is not as simple as a choice between science and advice, in his opinion.

The **Delegate of the USA**, as Chair of the Strategic Planning Working Group, agreed with the Danish remarks. He said that the issue was not a question of the balance between how much science we do for the sake of science, and how much advice we give. It was a problem of lack of appreciation that science is necessary, and that it is intended to address the needs of the advisory process. This would not be a troublesome message to most scientists. Scientists want to do science, but they also want to feel that they are relevant in doing science that is important in its ultimate application. A clearer understanding of the linkage between the science and the capacity to give good advice would be most welcome to those that are interested in the advisory side, as well as those that are interested in doing first-rate science. The balance between fisheries and the ecosystems in the Plan was thus not really as much of a problem as the failure of the Plan to deliver the message about the inter-relationship between the two. We would need to do a better job of expressing that, and perhaps there was a need to have separate sections in the report that more directly address science and advice. This should not in any way give the impression that they are in some way separate, but rather it should enable the reader to quickly focus on what is important to them without feeling that one had been left out or subsumed by the other. He did not agree that the issue of regional versus global is a problematic one. ICES is a regional organisation, but tackles problems that are of global importance. He agreed that the draft Plan is too ambitious in some respects, but we have to make it clear that while it is ambitious for the purposes of challenging the science community, there also has to be a prioritisation process in the identification of what are the realistic outcomes in the short, medium, and longer term. That would probably require some form of an Action Plan which will be discussed further. We would probably need two different Documents: a shorter Strategic Plan, and a more operational-type Action Plan. Regarding partnerships, we would need to carefully rewrite the Document so that it is clear that ICES is not an entity itself to carry out this very ambitious agenda. It is really a facilitator among the member nations, and hopefully a vehicle for the member nations to work in a more coordinated manner with the other international partners. In regard to the issue of social and economic sciences, his discussions had not indicated any serious objection to them being in the portfolio, as long as it is better articulated that the intent is to develop the sciences, not to give advice. We

need to be very clear about that. Likewise, there is a need for more transparency of what ICES is all about and how it does its business, and more outreach. The issue of inclusiveness, he said, is a very sensitive one. He believed it to be appropriate for ICES to have transparency and to communicate effectively, but the issues of how to include various interest groups, whether environmental or fisheries, is best handled at this stage at the national level. One approach might be for preparatory meetings to be organised by the national authorities, in which the scientists that participate in an ICES Working Group will meet interest groups within their own country, to explain what is going on, or to verify catch statistics or whatever it might be. He would not propose to say very much about including the work of ICES itself, or the advisory function, or people from outside the ICES scientific world in those discussions. The process of preparing the advice should be left to the scientists who are not linked to any particular interest group. All these points would be addressed when re-writing the Strategic Plan.

The **Delegate of the UK** said it was important to identify the target audience for the Strategic Plan. People have very different perspectives about ICES, depending on their job orientation. For that reason, many readers had found the draft Plan somewhat unnerving. If the main audience is senior national administrators, the language and content would need to be very different from that which would be appropriate for communication among scientists. The revised Document should be drafted accordingly.

The **First Vice-President** concluded that there was general agreement on the identification of the key issues, while recognising that there were a number of points which might be modified or added.

He said that priorities must be established, since many people did not recognise the full breadth of the ICES spectrum of activities, and felt that ICES may be seeking activities to depart from the existing core programme. ICES also needs to give consideration to the balance between the priorities, and to the role of ICES in the international system; what is the “added value” represented by ICES? Finally, the issue of communication within and outside the ICES community must be addressed.

In proposing how the various comments might best be incorporated in the Plan, the **US Delegate** introduced the proposals in Section 2 of Doc. Del:14 (see page 9). He proposed that there should be two Documents: a shorter Strategic Plan intended for an external audience (senior national administrators), and a second Document which would be more internal, designed for use within ICES and, for example, laboratory directors in the ICES Member Countries. This second document would be referred to as an Action Plan, which should set short-, medium- and long-term priorities. The goal would be to influence the work carried out at the national level, so that it would all fit into a common

framework to achieve the objectives, and also provide the ammunition that people need within the national laboratories to argue for the resources to fulfil these various priorities. Regarding the re-drafting, he suggested two options: (i) a group similar to the Bureau Working Group that prepared the initial plan should do the re-writing; (ii) within such a group include some of the “external scientists” which featured in the Open Forum. ICES had made a point of reaching out to them and getting their input. This could be carried even further by inviting a handful of people from the various groups we had heard from; somebody from a national administration, someone from the fishing industry, someone from the perspective of environmental groups to actually meet with the Strategic Planning Working Group, at least for some period of time in preparation of this new Strategic Plan. That second option would be much more complicated, but perhaps worthwhile. A further issue, he said, is timing. A Strategic Plan should be prepared with a view to adoption in Oslo, so that we could go forward with making preparations for the Copenhagen Meeting in 2002. More time could be taken on the Action Plan, and he suggested that a target completion date of the middle of 2002 would be appropriate for that. A heavy workload would devolve on the Consultative Committee, for example.

The **Delegate of Sweden** supported the First Vice-President’s summary, but emphasised that the effective incorporation of the fishing industry, as end users, would be important in reducing the mistrust with which the ICES advice was frequently perceived by them. He disagreed with the First Vice-President’s view that the involvement of the fishing industry should be confined to the national level. Concerning the separation of the Plan into two Documents, his preliminary reaction was that one Document would be sufficient. Referring *inter alia* to a Swedish Memorandum with comments and proposals for the Strategic Plan, given to the President during the meeting, he expressed the view that all comments expressed both orally and in writing should be carefully considered in the final phase of the process.

The **First Vice-President** proposed, with general agreement, that the Bureau should consider a preliminary re-draft in January 2001. The outcome would be communicated to the Delegates thereafter.

Regarding the target audience for a revised Plan, the **Delegate of Germany** said that if one looked at ICES from an outside perspective, there are many scientists in the outside world who look upon ICES science as being of minor quality. He drew attention to the relevance of this in connection with reviews of ICES-related institutes carried out by non-ICES scientists. A negative view of ICES science could lead to a reduction of funding for ICES institutes. In addition to senior managers, he said, we should involve these external scientists in the process of formulating the Strategic Plan in order to convince them that ICES science is good science.

The **Delegate of Latvia** supported the German point of view, and stressed that the Document must show managers and national governments the importance of national research as a basis for ICES advice, and for the management of living resources in accordance with the ecosystem approach.

The **Delegate of Denmark** supported the proposal for two Documents. The Strategic Plan should be completed during the coming year. The Action Plan should be considered in terms of how it relates to Council Resolutions, since the latter are really a form of Action Plan.

The **Delegate of Estonia** also supported the idea of having two Documents. The ICES Action Plan could also give a good basis for national action plans.

Supporting the separation of a revised Document into a Strategic Plan and an Action Plan, the **Delegate of Norway** expressed agreement with the argument that ICES needs to attract other scientific institutions in order to be able to improve ICES science. ICES must make itself attractive to these institutions.

The **Delegate of Poland** supported the statement by Germany, and the proposal to have two separate Documents.

The **Delegate of Spain** emphasised that the two Documents which had been proposed would be very different. The Strategic Plan should be a long-term Document looking to the future with no prioritisation, and addressed mostly to the people outside of ICES. The Action Plan would be an implementation plan with more concrete actions to be taken, and subject to review every few years in the same way as national research plans. He said that scientists in ICES-oriented institutes and in non-ICES institutes should be brought into the review process to facilitate valuable coordination between ICES plans and national plans.

In order to prepare a revised Strategic Plan in time to have it agreed by the Council in 2001 in Oslo, the **Delegate of Denmark** proposed that an internal ICES Working Group, perhaps the same as the previous Bureau Working Group, should be convened. He supported the suggestion on including external interests, but expressed uncertainty about how they might be invited to take part. He also stressed the importance of avoiding a repetition of the whole discussion at the 2001 Council Meeting. The procedure must be carefully managed. Delegates should be asked to consult their industry, because the Strategic Plan will be one which we will ask countries to sign up to in 2002. He recommended that a revised draft Strategic Plan should be circulated to Delegates in March 2001, seeking specific comments. Electronic communication should be utilised to the full, in order to expedite the process.

The **Delegate of Canada** supported the emerging consensus, but he pointed out that it might be difficult to include external interests in the Bureau Working Group. He suggested that such interests could be regularly consulted during the process, however.

The **UK Delegate** recommended that the Action Plan should not be too technical; it should be able to be broadly read and understood. He recommended that it should include not only the action plans from the Science Committees, but also the institutional actions which ICES will be taking, such as actions towards greater inclusiveness and better communication.

The **Delegate of Iceland** supported the ideas and views expressed by the Danish Delegate, but he did not think that ICES should go into a prolonged dialogue with other parties as suggested in Doc. Del:14, such as the fishing industry, environmentalists, or other international organisations. ICES had arranged quite an extensive dialogue with such parties and, of course, should give the fullest consideration to the suggestions, criticisms, and comments made during the Open Forum and other occasions when these matters had been discussed. ICES now had to come to decisions.

The **US Delegate** recognised that at some point it is up to the leadership of ICES to make the decision, and while we should continue to be sensitive to external interest groups we also need to recognise that we will never completely satisfy everyone, given the broad perspectives that surround ICES. Regarding the point made by Germany and others, he emphasised that the relationship between fishery science and the broader spectrum of marine science ecology is extremely important in terms of the strategic future of ICES. He believed that ICES would not be well served by the current perceived isolation of fisheries science from broader marine science. Regardless of its quality it has a credibility problem, so long as it is viewed as being isolated. He very strongly endorsed the point raised by Germany.

The **UK Delegate** supported the views expressed by Iceland and the US. A wide range of views had been solicited and presented to ICES, and he wondered what more information there is in the outside world that we do not have already. ICES is now in a significant re-editing phase as opposed to a significant knowledge-seeking phase, he said.

The **Delegate of Sweden** agreed that we have had a lot of intensive consultation with external interests and that we already have a clear message from all those we have consulted. He doubted that much additional information and experience would be obtained if we again tried to get the views of external interests. Concerning the need to involve all the Delegates in the re-drafting process, and not just those on the proposed Bureau Working Group, he supported the Danish suggestion that we try to establish electronic contact with all Delegates during the course of the work. He empha-

sised the importance of producing a revised Document. in a timely fashion.

The **First Vice-President** summed up:

- Produce two separate Documents: a short Strategic Plan which would distil the essence of the present draft, and an Action Plan;
- perceptions of the quality of ICES science must be addressed;
- electronic conferencing and the ICES website should be fully utilised to facilitate active and informed debate among Delegates during the production of a revised Strategic Plan;
- dialogue with external interests should be confined to the national level;
- the Bureau will take direct responsibility for the task of revising the Strategic Plan, starting with a first draft at the January 2001 Bureau meeting; this will be followed up by another [Bureau] meeting in April or May to finalise a draft for circulation to the Delegates;
- the revision process should be such that the Document. produced at the Oslo meeting in 2001 should not require any major revisions;
- the Action Plan should be developed for consultation with the Delegates by mid-2002;
- with a view to presenting the revised Strategic Plan as a Copenhagen Declaration for signing in 2002 by the Ministers of the Member Countries of ICES, consultations on a Diplomatic level will have to be organised following the 2001 Council Meeting; the assistance of the Danish Foreign Ministry, representing the Host Government, would be required.

The **Delegate of the USA** agreed that we must arrive in Oslo prepared to adopt the Plan; he firmly believed that a revised Document. could be brought to the necessary state of completion by that time.

The **Delegate of Latvia** stressed the importance of Delegates not prolonging the discussions to an extent which could jeopardise the development of a final text.

The **First Vice-President** repeated that following the presentation of a “straw man” at the January Bureau meeting, the Delegates would have several weeks in which to comment on it. He envisaged that the Bureau would meet some time in April or May, and produce a “semi-final” draft which would be tabled in Oslo for

consideration and agreement by the Delegates. He stressed that the main discussion among Delegates would take place during the January-April period, and by means of a discussion page on the ICES website. That would ensure an open debate, with each country being able to see the opinions being expressed by the other countries. He exhorted all Delegates to ensure that they provided updated e-mail addresses to the Secretariat.

The **Delegates** then **endorsed** the First Vice-President’s summary.

Following a break in the discussions, the **President** resumed the Chair. He invited the **Delegate of the USA** to introduce the resolution:

The Bureau shall take responsibility for the further development of the ICES Strategic Plan, as follows:

- 1) A revised draft Strategic Plan, reflecting the consultation that occurred leading up to, and during, the 2000 Annual Science Conference, will be considered by the Bureau at its meeting in January 2001;
- 2) Following the January Bureau meeting, a revised Strategic Plan will be distributed to Delegates and posted on the web site;
- 3) All Delegates are requested to post their comments on the web site, and to respond to comments by other Delegates. At least 45 days will be allocated to this exchange of comments on the revised Strategic Plan;
- 4) The Bureau will meet in April or May 2001 to further revise the Strategic Plan in response to comments received as a result of item 3;
- 5) By 1 June 2001, the Bureau will distribute to Delegates and post on the web site a version of the Strategic Plan that it considered really final (i.e. ready for adoption, perhaps with minor changes). Delegates will be expected to present the Strategic Plan to their national authorities with a view toward adoption of the Strategic Plan at the 2001 Annual Science Conference in Oslo;
- 6) The Consultative Committee and the Secretariat should prepare a draft Action Plan for implementing the Strategic Plan, to be distributed to Delegates for comments by 30 June 2002, with a view toward adoption at the 2002 Annual Science Conference in Copenhagen;
- 7) The Strategic Plan and the Action Plan should include provisions for updating the Plans at appropriate time intervals.

The **Delegate of Finland** pointed out the reference to national consultations. He considered that 45 days were not sufficient for the Delegates’ own considerations, as

national hearings should also be included, so that the approval would also be from a national point of view.

The **Delegate of the UK** proposed a minor change in the resolution which was adopted by the Council.

The **Delegate of Sweden** supported the resolution. Returning to the Action Plan, he considered that synchronising of the activities was essential and there was a need for coordination between the tasks addressed in the Working Groups and the Action Plan. Guidance on priorities should be included in the Action Plan. The **President** confirmed that this was the intention.

The **Delegate of the Netherlands** was concerned regarding the Action Plan, in particular regarding the timing. The present schedule did not allow much time for discussion. The **Delegate of the USA** agreed that the Action Plan would be a more detailed Document, and noted that this plan had been under development for about two years in the Science Committees. Since the Action Plan is largely the task of the Science Committees, he did not expect the same degree of consultations with clients as had been required for the Strategic Plan. The **Delegate of the Netherlands** was still uncertain whether the timetable would be realistic and/or would be desirable; more time might be needed. The **Delegate of Finland** pointed out that the Consultative Committee can only address this issue at its meeting in June. He made an alternative proposal to allow consultation within ICES Member Countries after the Annual Science Conference in 2001. It was agreed that such a consultation period would be slotted into the schedule. With this modification, the resolution was adopted.

Agenda Item 18 REPORT OF THE COORDINATING GROUP ON ICES ADVICE

Niels Axel Nielsen, Chair of CGADV, introduced Doc. Del:7, pointing out the main issues which has been dealt with by CGADV over the past year. In summarising, he said that the main requests from the Partner Commissions stressed that the advice should be timely, flexible, transparent and of high quality. Consequently, the main issues dealt with over the last year had been the improvement of the timeliness and flexibility in our advisory procedure. Useful conclusions in this respect had been drawn from the Dialogue Meetings, especially the 11th Dialogue Meeting in Nantes in 1999, as well as the Follow-Up Meeting in London in early February 2000. CGADV had principally taken care of the question regarding the timeliness of the advice by trying to amend the timetables and the actual terms of reference for a number of meetings. The Partner Commissions considered this as a step in the right direction. Regarding the more substantial changes in the advisory process, CGADV had not been very active this year, due to the decision taken last year to establish the Bureau Working Group on the Advisory Process (BWGADVP). Thus, CGADV as a group had mainly

dealt with the practical questions by discussing, with the Secretariat, how the detailed procedures could be amended.

The **Delegate of Ireland** raised the question of who is responsible for the quality management issues. It was assumed that MCAP would oversee such work as is necessary, to deliver high quality analyses and advice more cost-effectively.

The **President** replied in the affirmative, and explained that MCAP will assume the management role for overseeing that process.

The **Delegate of Denmark** added that the Secretariat was at the moment preparing quality assurance handbooks, in order to clarify the main steps in the data transfer and the way the storage and data software are handled in the stock assessment procedures. However, due to the daily heavy workload in the Secretariat, this might not proceed as quickly as originally planned. But in terms of CGADV dealing with this subject, the practical responsibilities were now with the Secretariat.

The **Delegate of Belgium** stated that extensive talks with the General Secretary and the Fisheries Adviser had taken place on how to proceed with the quality assurance handbooks. However, it was realised that this would not be an easy task to complete quickly, although considerable progress had been made. He further emphasised that this was not a task that could be dealt with within two or three months.

The **President** explained that during the last two years extensive discussions had taken place on this issue and a series of proposals had been agreed. These are being addressed at present, but they cannot be solved overnight. This would be one of the major issues for MCAP.

Agenda Item 19 STATUS OF ICES/GLOBEC PROJECT OFFICE

Alfred Post presented the Report on the Status of ICES/GLOBEC Project Office (Doc. C.M. 2000/Del:19) where he pointed out that when the initiative to establish a GLOBEC Office in the ICES Secretariat was taken, it did not appear to have financial implications. However, this turned out not to be the case. In 1998 a deficit of about DKK 730,000 was "absorbed" by the 1997/1998 ICES budget. Then to balance the deficit in the 1997/1998 GLOBEC Office budget, a contribution was transferred from the ICES budget.

The **President** then informed the Delegates that the Bureau considered that ICES is not in a position to fund the GLOBEC Office from the regular budget.

The **Delegate of the USA** confirmed that the National Science Foundation will continue to support the

ICES/GLOBEC Office at least through 2001 and potentially beyond, depending on an acceptable proposal and availability of funds.

The **Delegate of Norway** said that in principle they support the idea of maintaining an office and that they would be able to raise DKK 100,000 for a limited period and that perhaps they could find some way to finance the project.

The **President** proposed that if there is sufficient external funding to cover the direct costs, ICES should be prepared to continue with the GLOBEC Office by covering the indirect costs. Meanwhile, a working group should be set up to establish a policy framework for ICES future participation in global marine science initiatives of this nature.

The **Delegate of the Netherlands** was under the impression that GLOBEC was self-maintained, but had obviously not succeeded. Therefore he advised caution.

The **UK Delegate** stated that GLOBEC is potentially a good venture. It reaches out to scientists and other organisations that do not normally come to ICES.

On the basis of the above, a resolution was tabled as follows:

A Bureau Working Group on International Programmes shall meet for three days at ICES Headquarters to develop an ICES policy to provide an appropriate framework for ICES involvement in international programmes.

The Bureau Working Group shall report to the 2001 mid-term meeting of the Bureau.

The **Delegate of Finland** proposed that the membership should be Scott Parsons (Chair), Harald Loeng (Norway) and Colin Bannister (UK). The **Delegate of the UK** informed the Council that Colin Bannister would not be available. Kjell Olsen indicated that Harald Loeng might be available, but he would need to consult. Scott Parsons, the outgoing President, and Pentti Mätkki, the incoming President, will consult on this matter and determine an appropriate membership.

The **Council then adopted** the proposed resolution.

Agenda Item 20 PROGRESS REPORT ON GEF BALTIC SEA REGIONAL PROJECT

The **President** expressed his pleasure at welcoming Jan Thulin back to the Council after his serious car accident that had prevented him from attending the 1999 ASC, which he had been very instrumental in organising.

Jan Thulin thanked the members of the Council for their support last year during his recovery from his accident. He then presented a summary of the GEF Baltic Sea Regional Project.

Jan Thulin stated that the objective of the Baltic Sea Regional Project was to introduce ecosystem-based assessments to strengthen the management of Baltic Sea coastal and marine environments through regional cooperation and targeted transboundary activities. He noted that ICES is responsible for Component 1 on Large Marine Ecosystems, with a budget of USD 230,000. There have been several meetings of the Core Group and several workshops have been held to prepare material for the development of a proposal. Component 2, on Non-Point Source Pollution, is coordinated by HELCOM and several coordination meetings have been held with HELCOM. Chris Hopkins had served as consultant for Component 1 and had produced a report on monitoring in the Baltic Sea that will be published in the near future.

Jan Thulin had been active in seeking additional sources of funding. He had also participated in a number of ICES Working Group meetings and HELCOM meetings to present information on this project and seek support for its work. A Workshop on Large Marine Ecosystems was arranged in Riga in July, with participants from all five recipient countries as well as from ICES and HELCOM.

As the entire project is based on the LME concept, which contains five modules, the GEF project had followed the requirements of these modules. Three modules will be covered in this project: 1) ecosystem quality indicators; 2) the carrying capacity of living resources; and 3) monitoring and assessment of ecological health and biological indicators. The workshop in Riga concentrated on establishing cooperation among institutes within each participating country.

A report was transmitted to the World Bank on 7 September 2000 to provide the plans for the project. A Project Implementation Plan, providing details for the implementation of the entire project, now needed to be submitted to the World Bank. Shared-cost funding of 5 million USD had been found, but an additional 5 million USD needed to be committed to supplement the initial amount. The funding request from the World Bank amounted to 42 million USD.

Jan Thulin presented an organisational framework for the Baltic Sea Regional Project, with the Project Manager for Component 1 located at the ICES Secretariat and sub-project managers will be located in the five recipient countries. A similar mechanism will be set up for Component 2 in HELCOM. He then presented a summary of the activities that will be carried out to implement the LME Component. The recipient countries now needed to prepare details of the activities that they will undertake to implement this project.

The full project proposal was intended to be completed and submitted to GEF before the end of this calendar year. The western countries around the Baltic Sea will be consulted during the period before the end of the year.

The **Delegate of Finland** congratulated J. Thulin for the work that he had been able to achieve during the past year. He felt that this was a very important project for the Baltic Sea.

The **Delegate of Germany** expressed his interest in this project and appreciated the detailed development of the proposal. He asked about the nature of the cooperation with the western countries around the Baltic Sea in terms of implementing the implementation plan.

J. Thulin stated that on-going EU projects had been considered during the Riga workshop. One type of activity was the conduct of joint expeditions in the Baltic Sea with extra days added for technology transfer and training for participants from the recipient countries taking place after the workshop, with expenses covered by the Baltic GEF project. A number of other proposals for activities were suggested.

The **Delegate of Denmark** appreciated the initiative of this project. He asked how the involvement of the western Baltic countries could be assured. With the anticipated funding, it should be possible to initiate major data collection and analysis activities in the region. However, with these new activities, there would be a request for the western Baltic countries to participate also. This would create a number of new tasks to be added on to existing tasks. This would take all the capacity of these countries. He felt that it would be important to identify all the institutes that will take part in this work from the entire Baltic Sea. He asked when the coordinating groups in each country would be established. He also requested information on the impact of this work on the ICES Secretariat and the types of resources that would be needed.

In response to these questions, J. Thulin stated that the implementation period will extend to April 2001. In many cases, the contribution by western countries will be in-kind contributions that may include activities already planned by western countries. The designation of these contributions will be indicated by April 2001.

In terms of Secretariat resources, the **General Secretary** stated that the coordination of this work will continue to be done by J. Thulin from the Secretariat offices. Under the project structure, this will continue in the same way, and the Project Coordinator will have a great deal of work, together with an assistant coordinator and national coordinators. The significance of this project could be large, with large amounts of data being submitted. He stated that this project will be very important for ICES.

The **President** noted that the Council had previously agreed to ICES support for this project. He expressed appreciation that the project appeared to be proceeding well and wished J. Thulin all success in the further implementation of this project.

J. Thulin thanked the Council for their support.

Agenda Item 21 REPORT OF FINANCE COMMITTEE

Alfred Post (Chair of Finance Committee) presented the Committee's Report (see Report of the Finance Committee later in this *ICES Annual Report for 1999/2000*), the main features of which are highlighted below as Items 21.1 to 21.5.

21.1 Audited Accounts for Financial Year 1998/1999

The Committee had reviewed the Audited Accounts and Balance Sheet for 1998/1999 contained in Doc. C.M. 2000/Del:1. Having noted that the Committee had signed the Accounts and Balance Sheet, the **Council unanimously approved** the Audited Accounts for 1998/1999.

21.2 Estimated Accounts for Financial Year 1999/2000

The Committee had reviewed the Estimated Accounts for Financial Year 1999/2000 presented in Doc. C.M. 2000/Del:4. The **President** informed the Council that the ICES Year would now change from 1 November to 31 October to 1 January to 31 December. The transitional year 1999/2000 would thus consist of 14 months which would have serious financial implications. He confirmed that the costs of the extra two months would be of the order of three million kroner. The President went on to describe how the current estimates showed ICES to be in an even more positive financial position than that calculated previously, possibly of the order of two million kroner more. This is an unforeseen but welcome situation; accordingly the Bureau had recommended that 500,000 kroner be set aside as a contingency fund to cover the start-up costs of the new advisory process, and another 500,000 kroner for funding and equipping the new meeting rooms which are planned for ICES headquarters. The Bureau had further recommended that the residual one million kroner could be used either to offset the value of the bonds which would otherwise have to be sold to cover the two extra months in the transitional year, or for the Capital Reserve Fund.

The **Delegate of Sweden** asked about the procedure of building up the Capital Reserve Fund. The Chair of the Finance Committee described the process, and explained how the Capital Reserve Fund had been rebuilt in recent years.

The Chair of the Finance Committee informed the Delegates that the Committee had accepted the Estimated Accounts for 1999/2000 and recommended their approval by the Council.

The **Council unanimously approved** the Estimated Accounts, along with the Bureau's proposals as described by the President.

21.3 Draft Budget for Financial Year 2001

The Committee had reviewed the Draft Budget for Financial Year 2001 (Doc. Del:5) and attention was drawn to the particular points in the Committee's report. The Chair noted that the Committee had accepted the Draft Budget for 2001 and recommended its approval by the Council. He explained that itemised accounts for ongoing projects would be included in future Draft Budgets.

The **Delegate of Latvia** queried the reasons for a decreased contribution from HELCOM. In response, the **General Secretary** pointed out that this corresponds to the sum in HELCOM's budget which in turn reflects the advisory matters which were at the top of HELCOM's priority list.

Under the item "Interest Receivable" the **Delegate of Sweden** wished to be informed what interest rate had been applied. In response, the Chair of the Finance Committee explained that this was only an estimate.

The **Delegate of Spain** requested some information regarding "Staff Assessment", and the General Secretary explained that this was instead of income tax.

The **Council unanimously approved**, by a roll-call vote, the Draft Budget for 2001.

21.4 Forecast Budget for Financial Year 2002

The Committee had reviewed the Forecast Budget for Financial Year 2002 presented in Doc. C.M. 2000/Del:6, as submitted by the Bureau in March 2000 to Contracting Parties and Delegates.

The **Delegate of the USA** asked for an explanation why there was such a massive increase in the costs for the 2002 ASC and whether the Centenary Fund could not be used. To this the **General Secretary** responded that in 2002 ICES would have to pay for the renting of the meeting premises and possible local transport costs. The Centenary Fund would be used to support special events and the ICES History publication.

The **Delegate of Latvia** wished to receive clarification where the Conference fee money was used. In reply to this the **President** pointed out that the new Bureau would decide what is to be done with these funds.

Several Delegates indicated that they wished to see more transparency regarding the financial implications of ICES policy objectives. The **President** assured the

Delegates that this would be taken up by the Bureau, adding that the General Secretary's proposal to revise the format and content of the Secretariat Workplan should also clarify matters.

The **Delegate of Belgium** asked whether the value of each share is fixed at this point, or if it is a draft forecast value? The **President** explained that it would be fixed now, through the vote about to be taken.

The **Council approved** the Forecast Budget for Financial Year 2002 by the necessary 2/3 majority (18 for and 1 against) in a roll-call vote.

21.5 Appointment of Auditors for 2001

The Chair noted that the Committee was very satisfied with the services of the Council's Auditors during the past year. The Committee recommended that they be appointed for another year. The **Council endorsed** the appointment of KPMG C. Jespersen as ICES Auditors for 2001.

The **President** warmly thanked Alfred Post for his admirable leadership of the Finance Committee during his period as Chair.

Agenda Item 22 REPORTS AND RECOMMENDATIONS OF CONSULTATIVE COMMITTEE

The **President** noted that the report of the Consultative Committee, the draft resolutions, and the reports of the Committees and Theme Sessions would be considered under this item.

The **Chair of the Consultative Committee** introduced the draft resolutions of his Committee, comprising the resolution for the mid-term meeting of the Consultative Committee and a proposal for setting up a Steering Group to work by correspondence and report to the Consultative Committee in June concerning the future handling of scientific issues in relation to salmonids. This is a serious issue and the urgency should not be underestimated.

The **President** recalled that at the 1999 ASC it was agreed that consideration should be given to the issue of salmonid science within ICES, given that the change in the Science Committee structure had eliminated the ANACAT Committee from ICES and that a number of concerns had been expressed concerning the lack of a clear forum within ICES for the discussion of scientific issues on salmonids. He pointed out that there is a clear risk that other bodies might take over the role of coordinating salmon research in the North Atlantic if ICES does not act quickly. The **Delegate of Finland** pointed out that the report of the Theme Session Y on "Downturn in North Atlantic Salmon Abundance" had recommended that a new committee on salmon issues be established.

The **Chair of the Consultative Committee** stated that this Theme Session had recommended that a full committee on salmon be established under the Living Resources Committee and that the Chair of this salmon committee should have an *ex officio* seat on ACFM. Later, however, this recommendation was not supported by the salmon scientists involved, so it was obvious that ideas were still being developed on this topic.

The **President** expressed his appreciation to A. Isaakson and others for taking the initiative to prepare the Theme Session on salmon, but noted that there had not been a broad representation of scientists involved in salmon in the North Atlantic.

The **Delegate of Iceland** stated that the reports of possible initiatives outside ICES must be taken seriously. He stated, however, that he was disappointed with the outcome of the discussion on this issue reported by the Chair of the Consultative Committee. He felt that the Council should be willing to go back to former structures if needed. The salmon issue is very broad across the North Atlantic and involves freshwater scientists as well as marine scientists. It is of the utmost importance that the Council responds quickly and positively to this issue. He felt that the suggestion for the establishment of a Steering Group on this issue was good but that the Council should not hesitate to take bold steps.

The **Delegate of Ireland** supported the statements of Iceland and pointed out the great importance of properly handling salmon issues within ICES.

The **Delegate of Sweden** noted that the issues related to eel were also very important and scientists concerned with eel biology had also lost their "home". He queried whether the consideration of eel had also been discussed in association with salmon.

The **Chair of the Consultative Committee** replied that this discussion had concentrated on salmon.

The **Delegate of the USA** stated that a lack of funding was the reason that salmon scientists from the USA had not attended. He felt that the steering group considering this issue should not be timid in the nature of the proposals that they consider. He requested the Secretariat to take immediate action to determine the people who should take part in this work, by correspondence, to develop a proposal.

The **Delegate of Denmark** suggested that the terms of reference of the Consultative Committee be amended to include that they should consider whether such an initiative might be needed for other research areas.

The **President** stated that this is a crucial issue. He believed that the earlier decision to restructure, although taken in good faith, had had some negative impacts and that these must be redressed where neces-

sary. This is a serious issue, and the urgency should not be ignored. If the procedure proposed in the draft resolution were agreed, it should be amended to include reference to the possibility of creating a new committee for this purpose. This would send the signal that the Delegates take this issue very seriously.

The **Delegate of Iceland** questioned whether the report anticipated by this procedure should be made available for the January meeting of the Bureau.

The **President** suggested that the membership of the steering group should include, in addition to the Chairs of the Consultative Committee, the Living Resources and Resource Management Committees, WGNAS, and WGBST, as well as a person from North America who is very interested in this issue, and who could provide ideas from that area.

The **Delegate of the USA** supported the idea of consideration of this issue at the January meeting of the Bureau, although this would preferably require that this work be conducted under the Bureau rather than the Consultative Committee. This step would elevate the level of the steering group, but would require proper consultations with the scientists involved.

The **Delegate of Finland** did not oppose this suggestion of the Delegate of the USA, but he felt that the linkage with the Consultative Committee should be maintained and he would like to have the Consultative Committee discuss this issue at its meeting in June. Regarding the proposal for additional representation by North America, he suggested that the First Vice-President be included as a member of this group to include the North American component.

The **Chair of the Consultative Committee** reported that the Consultative Committee had discussed the issue of topic groups for the past few years and there had always been a strong division in views on this issue. This would probably be the case in June also. If the Council wishes more decisive action, this would best be done by following the suggestion of the Delegate of the USA.

Subject to these clarifications the Council **approved** the resolutions prepared by the Consultative Committee.

The **Delegate of Belgium** was concerned with the question of whether there was a maximum number of scientific committees within ICES. For each topic, consideration should be given to whether a specific structural element is needed such as a Committee.

The **President** stated that when the new Committee structure was agreed, the number of Science Committees was reduced from twelve to seven. There had been a great deal of discussion at that time about topics not specifically covered. Here, with salmon, there was the

issue of ICES potentially losing the participation of scientists working on this very important topic of Atlantic-wide significance.

After further discussion, the **Delegate of the USA** proposed the following resolution:

A Bureau Study Group to Develop a Salmonid Science Initiative (Chair: Jóhann Sigurjónsson) will work by correspondence to:

- a) identify the need for a salmonid science initiative in ICES by consulting with appropriate expertise in Member Countries;
- b) identify the appropriate organisational structure to stimulate salmonid scientists to participate in ICES, including the possibility of establishing a Salmonid Science Committee;
- c) consider whether such an initiative might also be needed for other research areas related to anadromous and catadromous fishes;
- d) report to the January 2001 meeting of the Bureau.

The membership of the Group will include the First Vice-President of the Council and Chairs of the Consultative Committee, Living Resources Committee, Resource Management Committee, North Atlantic Salmon Working Group, and Working Group on Baltic Salmon and Trout.

The **President** pointed out that this should not be construed as a rejection of the Consultative Committee proposal, but merely an elevation of the level of the group handling this topic.

The **Delegate of the USA** indicated that there was general support for the idea that the terms of reference on this topic should also include consideration of the issue of eel and other anadromous and catadromous-related issues.

The Council **agreed** to this proposal.

In the light of the above decision, the Council agreed to an amendment to one of the terms of reference for the mid-term meeting of the Consultative Committee.

The draft resolutions of the Fisheries Technology Committee were considered and adopted without amendment.

The **Delegate of Finland** stated that previously the draft resolutions had given an indication of the percentage of the time that would be spent on advisory work for each group. The President pointed out that some of this information was now contained in the "Supporting information" portion of each draft resolution, although not with estimates of percentages.

The **Delegate of the UK** stated that he also wished to see information on the percentage of time spent on advisory activities by each Working and Study Group.

The **General Secretary** replied that this information could be supplied next year. This information was originally provided in response to Working Group on Cooperative Procedures and was used in this context. The figures were not available at this meeting, but they could be provided next year.

The **President** requested the General Secretary to consider how this information could best be presented.

The **Delegate of Canada** pointed out that Working Groups meet at national expense and the Member Countries were actually paying for the attendance at these meetings.

The draft resolutions of the Oceanography Committee were reviewed. The **Chair of the Consultative Committee** pointed out that the Working Group on Shelf Seas Oceanography has been dissolved and replaced by the Study Group on Modelling of Physical/Biological Interaction. In addition, he drew attention to the draft resolution on a Steering Group for GLOBEC; he stated that the Consultative Committee was not the best group to consider the GLOBEC issue, but it wished to point out the scientific importance of GLOBEC issues in ICES.

The **Delegate of Canada**, noting that there would now be an ACE in addition to ACME and ACFM, proposed that MCAP review all relevant resolutions and determine the reporting requirements for these groups in the light of this new Committee.

It was agreed that this needed to be done, and that the best mechanism needed to be developed.

The **Delegate of Denmark** pointed out the importance of the work of the Study Group on Incorporation of Process Information into Stock Recruitment Models. A great deal of money and effort was spent on the study of process information. In this context, it is very important that over the coming years one is prepared to incorporate that knowledge into the pragmatic stock recruitment models and assessment activities which are the objects of this Study Group.

The **Delegate of Sweden** stated that the attendance at the meetings of a number of Oceanography Committee Working Groups was very low and there may not be adequate expertise to fulfil the terms of reference with such a low attendance. He queried whether ICES had a mechanism for reviewing this, so that the Council does not approve a large number of meetings for which there will be very low attendance.

The **Chair of the Consultative Committee** replied to the question concerning ACE. He stated that the Con-

sultative Committee had noted that there were a large number of Working Groups that were working on various aspects of ecosystem issues. It was felt that MCAP should review the terms of reference for the various groups to ensure that there would not be conflicting results from the many groups. In terms of attendance at Working Group meetings, the Consultative Committee had initiated a peer review process for Working Group reports that would take into account the amount and breadth of representation at meetings.

The Council **adopted** the resolutions of the Oceanography Committee, with the exception of the resolution on GLOBEC that would be considered under Agenda Item 19.

In presenting the draft resolutions of the Resource Management Committee, the **Chair of the Consultative Committee** pointed out the re-establishment of the Working Group on Methods of Fish Stock Assessment and the creation of a Steering Group to coordinate courses in fish stock assessment techniques.

The resolutions of the Resource Management Committee were **adopted** without amendment.

In presenting the draft resolutions of the Marine Habitat Committee, the **Chair of the Consultative Committee** drew attention to the new Working Group on Marine Mammal Population Dynamics and Habitats. When the Committee structure was changed several years ago, two working groups were established, one under the Living Resources Committee and the other under the Marine Habitat Committee. These groups had subsequently met together and it was decided that it would now be better to merge these groups. There was also an initiative for a Sea-Going Workshop on Biological Effects Techniques. This initiative lacked some funding and the organisers hoped that ICES would provide some funding for some materials.

He further pointed out that the linkages to the Advisory Committees would need to be reviewed in the light of the creation of the new ACE.

The **Delegate of Iceland** noted that the Working Group on Marine Mammal Population Dynamics and Habitats was proposed to report to the Marine Habitat Committee. He felt that this Working Group should rather report to the Living Resources Committee, as much of its work would be associated with this Committee.

The **Chair of the Consultative Committee** replied that when the Marine Mammals Committee was disbanded, two working groups had been established, the Working Group on Marine Mammal Population Dynamics and Trophic Interactions under the Living Resources Committee and the Working Group on Marine Mammal Habitats under Marine Habitat Committee. The placement of this new merged Working Group was agreed between the Chairs of these Committees.

The **Delegate of Iceland** stated that his government was of the strong opinion that marine mammals were a living resource and that this should be recognised in the placement of this merged Working Group and, thus, that it should report to the Living Resources Committee.

The **Delegate of Norway** agreed with the proposal of the Delegate of Iceland that this Working Group should be placed under the Living Resources Committee

The **Delegate of Belgium** stated that in no case should marine mammals be considered living resources, and this should be clearly stated.

The **Delegate of the UK** proposed that this working group report to the ACE. This proposal was supported by the Delegate of Canada.

Accordingly, the Council **decided** that the Working Group on Marine Mammal Population Dynamics and Habitats should report to the Advisory Committee on Ecosystems.

With this change, the Council **adopted** the resolutions from the Marine Habitat Committee.

The Council reviewed the draft resolutions from the Mariculture Committee and **adopted** them without comment.

In presenting the draft resolutions of the Living Resources Committee, the **Chair of the Consultative Committee** pointed out two issues related to funding: 1) funding for the Chair of the Study Group on Elasmobranch Fishes to attend the ICCAT shark meeting in Madrid in November 2000, and 2) funding available from the Sloan Foundation for ICES representatives to attend a meeting related to the Census of Marine Life.

The **Delegate of Belgium** noted that there were two Working Groups on similar issues: the International Bottom Trawl Survey Working Group under the Resource Management Committee and the Working Group on Beam Trawl Surveys under the Living Resource Committee. He questioned whether it might be possible to merge the meetings of these two groups as they cover similar topics and would both meet in April and may involve many of the same people.

The **Chair of the Consultative Committee** stated that the problem is broader than this, as there were a number of trawl survey working groups reporting to different committees, however, they generally covered different areas. One proposal by the Consultative Committee was that there be a special session for trawl survey results at the ASC, at which greater coordination may be achieved.

The **Delegate of Belgium** felt that the Working Group on Beam Trawl Surveys should meet in advance of the International Bottom Trawl Survey Working Group.

It was agreed that this would be discussed further and that a proposal would be made.

With regard to the proposal for the Chair of the Working Group on Elasmobranch Fishes to attend the ICCAT meeting, the **Delegate of the USA** proposed that criteria be developed in regard to when ICES should provide funds for the Chairs of Working Groups to attend the meetings of other organisations. One important aspect was whether ICES had received a specific invitation to send a participant to this meeting.

It was noted that ICES had received an invitation to send a participant to attend the ICCAT shark meeting. The Council therefore **approved** the use of funds to allow the Chair of the Working Group on Elasmobranch Fishes to participate.

With regard to the proposal that ICES nominate participants to a meeting concerned with the global Census of Marine Life, the **Chair of the Consultative Committee** stated that no specific participants had been proposed as the mechanism for their selection had not been clear to the Consultative Committee. It was noted that, although this activity should be open to any ICES scientist, there would only be limited funding available from the Sloan Foundation to attend the proposed meeting in Florence. Thus, it was agreed that a group be created in which any ICES scientist can participate; a core group should be nominated as the basis of the group, however. A second resolution should be adopted authorising the General Secretary to develop a procedure for negotiating funding and determining how the funds for travel from the Sloan Foundation should be used.

The **Delegate of Denmark** pointed out that the terms of reference of the Stock Identification Methods Working Group under the Living Resources Committee were related to one of the terms of reference of the Working Group on the Application of Genetics in Fisheries and Mariculture (WGAGFM) under the Mariculture Committee. It was agreed that the **Chair of the Consultative Committee** would ensure that the Chairs of these two Working Groups correspond with each other to ensure that there was no unnecessary overlap in their work.

With the above comments, the Council **adopted** the resolutions of the Living Resources Committee.

In considering the draft resolutions of the Baltic Committee, the **Chair of the Consultative Committee** pointed out that this Committee carries out a number of activities that are similar to those of other Committees but which are specific to the Baltic region. In this con-

text, he drew attention to the proposed Workshop on the Scientific Basis for Ecosystem Advice in the Baltic.

In discussion, the **Delegate of Finland** supported this Workshop as an initiative to promote cooperation among several relevant regional marine organisations in the Baltic. He questioned, however, the lack of reference to the Baltic GEF project in the report of the Baltic Committee.

The **Chair of the Consultative Committee** noted that there had apparently been a lack of information on this project in the Baltic Committee. However, some consultation may have taken place during this ASC. The Council stated that there was a need for consultation and coordination on these issues and requested the Chair of the Baltic Committee and the Chair of ACE to ensure this coordination.

With these comments, the Council **adopted** the resolutions of the Baltic Committee.

The **Chair of the Consultative Committee** drew attention to the draft resolutions for publications, noting in particular the resolution for the publication of the papers from the history session at the 1999 ASC in the *ICES Cooperative Research Report* series. The General Secretary stated that there had been a request for the publication of these papers by some of the authors, as well as other persons who felt that this would be valuable. The Council **agreed** that these papers should be published as proposed.

The **Delegate of Finland** noted that the ICES Annual Ocean Climate Status Summary, proposed for publication in the *ICES Cooperative Research Report* series, did not contain any information on the Baltic Sea, and he requested clarification of whether this information could be included. In response, the **Delegate of the UK**, who is also Chair of the Working Group on Oceanographic Hydrography, stated that there were no participants in his Working Group to provide this information. The Council encouraged participation in this group by scientists from the Baltic Sea region.

In reviewing the resolutions from ACFM, the **Chair of the Consultative Committee** drew attention to the problems associated with the Study Group on Baltic Herring and Sprat Maturity, as there had been severe difficulties in obtaining participation in this work. The General Secretary stated that he had to cancel the 2000 meeting of this Study Group owing to the lack of data to be used by this group. He proposed that this work be deferred until it was apparent that there is adequate information to allow this work to be conducted.

The **Delegate of Poland** stated that a similar topic may be handled by the EU at the present time. The **Delegate of Denmark** proposed that this resolution be adopted as is, but that Delegates take steps to ensure that the required information was compiled by the appropriate

time. The **Delegate of Estonia** stated that he felt that this material was available but must first be compiled by the individual institutes in an appropriate manner.

Noting that this Study Group will work by correspondence during 2001, the Council **agreed** to adopt this resolution and encouraged the relevant countries to contribute material. The situation would be reviewed again in 2002.

With regard to the resolution for the terms of reference for the Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine, and Anchovy, the **Delegate of Portugal** requested that the term of reference to assess the status and provide catch options for 2002 for sardine stocks be prepared according to subdivisions. The Council subsequently **agreed** to a modification of this term of reference.

With the above clarifications, the Council **adopted** the resolutions from ACFM.

The draft resolutions from ACME were considered, and it was noted that the Committee to which some of the Working Groups should report needed to be reviewed.

The **Delegate of the UK** asked whether the various activities associated with the response to the requests from OSPAR on Ecological Quality Objectives (Eco-QOs) were complementary. The **Delegate of Canada** stated that ACME had ensured that there would be coordination among the relevant Working Groups; this would be undertaken by the Planning Group for the Ecological Quality Objective Requests.

The **Delegate of Denmark** noted the necessity of co-operation between WGECO and WGMMPH and stated that the new MCAP should be charged with ensuring consistency in approach between these Working Groups.

The **Delegate of Canada** pointed out that the minutes of the Consultative Committee reported that a term of reference to respond to a request from a client Commission was removed from the resolution for the 2001 meeting of WGECO, and he asked whether this was a request from HELCOM.

The **Chair of the Consultative Committee** confirmed that this was a HELCOM request concerning the status of fish stocks in the Baltic Sea. The Consultative Committee wanted to ensure that this issue would be handled consistently and requested MCAP to consider this request and determine how to handle it.

The **Delegate of Finland** questioned why there was a Study Group on Ballast and Other Vectors when the WGITMO could also handle this issue. The **Delegate of Ireland** stated that these groups would meet at the same venue with the Study Group meeting first and

reporting initially to WGITMO; thus, there was no problem of duplication of effort.

With the above comments, the Council **adopted** the resolutions from ACME.

The **Chair of the Consultative Committee** drew attention to the proposals for symposia for the next four years. He noted that it was not completely clear what the financial obligations of ICES were in regard to these symposia. He proposed that guidelines be drawn up concerning what ICES sponsors financially, and under what conditions. The **President** noted that, at present, there was no clear policy regarding financial contributions.

The **Delegate of Finland** stated that Academic Press had only agreed to publish proceedings from two symposia per year. As the proposals of the Consultative Committee provided for more than two symposia in 2003, funding plans needed to be made for publishing the results of the third symposium.

With regard to the Symposium on the Role of Zooplankton in Global Ecosystem Dynamics: Comparative Studies from World Oceans, the **President** reported that he had discussed collaboration with the Executive Secretary of PICES on these issues, and felt that this Symposium would be useful in this regard. Noting that there was no venue yet for this Symposium, the **Delegate of Belgium** stated that he would consider hosting this Symposium in Belgium, but he could not make a formal offer at this time.

The **Delegate of Norway** asked whether funds from 2001 could be moved to sponsor the third symposium in 2003.

The **General Secretary** stated that ICES would support only part of the costs of this symposium, either the cost of the symposium or the costs of publication. It may be possible to find funds to support the third symposium in 2003.

The **Delegate of the USA** stated that this appeared to be a useful group of symposia, and he proposed that they be adopted in principle. However, in future, he suggested that the proposals be required to include a business plan for the conduct of symposia that includes an outline of the necessary resources and funding of the symposia.

With these comments, the Council **agreed** to the list of symposia for ICES to sponsor or co-sponsor during the next four years.

Future Annual Science Conferences

The **Chair of the Consultative Committee** provided an overview of the plans for the 2001 ASC. As the lectures that had been held on the mornings of two days during the 2000 ASC had been considered suc-

cessful, the Consultative Committee had proposed two additional lectures for the 2001 ASC. However, as the speakers chosen live in the Southern Hemisphere, it would be necessary for ICES to provide travel funds for their participation.

The **Delegate of Finland** proposed that this programme be accepted and that further details be worked out by Denmark.

Concerning the invited speakers, the **President** felt that it was desirable to have participation from scientists from outside the North Atlantic and that Pentti Mälkki's Centenary group should try to find funding for this.

The **Chair of the Consultative Committee** then presented an overview of the plans for the 2002 ASC, which were less developed than those for 2001. He pointed out that there was not a good balance in the topics proposed for the Theme Sessions. There was a question of whether there should be an Open Lecture, and this had not yet been decided.

The **Delegate of Ireland** agreed that the themes for the 2002 Centenary ASC were not well balanced between the fisheries and environmental sides. She proposed that additional environmental themes be developed for this meeting. This was **agreed**.

The attention of the Council was drawn to the reports of the Committees and Theme Sessions. In this context, it was noted that the Theme Session X to which fisheries managers had been invited had been a success. However, the **Chair of the Consultative Committee** pointed out that there were many complaints that Theme Session X overlapped with the Mini-Symposium. A number of people had wanted to attend both sessions and were disappointed that this was not possible.

The **President** agreed that this must be taken into account in planning for future ASCs.

Agenda Item 23 ACFM AND ACME MATTERS

There were no ACFM and ACME matters to be discussed.

Agenda Item 24 REPORT OF THE FOLLOW- UP DIALOGUE MEETING (LONDON, 8 FEBRUARY 2000)

The **President** introduced C.M. Doc. Del:20 and then invited **Niels Axel Nielsen** to present the report. He emphasised that the most important part of the meeting was that a rather precise feedback from the Nantes Dialogue meeting could be given to the participants and our Partner Commissions. The strategy is to be

responsive to requests for changes and to be precise in our presentation to the clients. What ICES had been doing to improve the dialogue was that within one year two dialogue meetings had been held. It was very important to maintain the dialogue with Partner Commissions at regular intervals; detailed checklists of the work process and management procedures should be developed, which could then be used as a feedback mechanism from managers. The issue of whether ICES could be more flexible and timely in the advice was also discussed. The information presented by ICES had been generally accepted by the Commissions as a positive move, as was also shown at the Open Forum.

The follow-up meeting also dealt with the Precautionary Approach (PA), particularly in regard to the views of managers concerning ICES application of the PA. It was stressed again that the dialogue had to be conducted in such a way that when setting acceptable risk levels associated with, for example, maintaining SSB above a certain level, this should be recognised as a difficult task which should be on the basis of all stakeholders' inputs. But to have this discussion in an educated and well-informed way, one would need to develop the tools in a careful manner, such as graphs with a shaded area, option tables, etc., but these tools were all of a rather complicated technical nature.

As an overall conclusion of the meeting it could be stated that with regard to the practical relations and communications with Commissions the work had not yet been completed, but progress had been made compared to previous years, and a satisfactory dialogue and working climate to improve things further had been established.

Concerning the Precautionary Approach, the meeting also helped to improve the technical debate and to establish a working environment with a view to further advancing the application of the precautionary approach even further.

The **Delegate of Iceland** commended Niels Axel Nielsen for his leadership in developing the working relationships between ICES and the clients. He raised the question whether ICES has had any success or made any progress in trying multi-annual assessments of fish stocks in order to reduce the workload of ACFM and the pressure on our advisory process. Often these assessments were a repetition of what had been done the year before, and in the view of Iceland, this was an issue that should be considered. A move towards multi-annual assessments would be facilitated if the managers introduced harvest control rules. He requested that MCAP should consider this issue.

Niels Axel Nielsen in his reply pointed out that there should be further meetings to resolve the disputes concerning the validity of a particular assessment. If few countries were involved and their fleets experience different stock abundance, it was often agreed in the negotiations to accept a particular assessment, but then

request ICES to take another look at the status of the stock as quickly as possible. Although the addition of another year's assessment would make very little difference, it might be difficult to envisage a scenario where bi-annual assessments were incorporated into the process. This did not seem feasible at the moment.

The **President** pointed out that this issue will be discussed in the new Committee once it is up and running in the context of the discussions which have occurred, and on the basis of the feedback from the clients and how the system may evolve.

The **Delegate of Germany** referred to the question of including input from non-specialists in the advice. This had been repeatedly brought up from the fisheries side, but also from other stakeholders. He wished to know whether this had been developed further since the Dialogue Meeting and if there should, or should not, be the possibility of including non-specialist advice in the advisory process from other stakeholders.

Niels Axel Nielsen stated that on a number of occasions this had been attempted, and referred to the summary of Theme Session X. There had been consultations between the industry and the scientists, and the authorities, under the umbrella of a European Fisheries Development Programme (PESCA) which holds regional meetings. The focus had been from a regional perspective, and had attempted to clarify the background for the assessment and also the possibilities of having early inputs.

The **Delegate of the UK** felt that the conduct of the Follow-Up Dialogue Meeting reflected a real exchange of views between ICES, the Member Countries, and the Commissions and that the openness reflected well on ICES as an organisation. One particular thing which could be drawn from that meeting was the issue of inclusiveness or transparency, and the involvement of other interested parties. During the development of the Action Plan Document, which underpins the Strategic Plan, this particular issue should be given an appropriate and specific profile.

The **Delegate of the USA** also complimented Niels Axel Nielsen for an excellent and very informative report. He wished to comment on two issues which had been raised by other speakers. Firstly, concerning the multi-year assessments, he considered the response given by Niels Axel a realistic one, given the pragmatic situation ICES is in, with fisheries management seemingly having an insatiable thirst for more and more assessment information. Therefore, there was a need to continue to pursue alternatives that would make the system more efficient and more operational from the perspective of the science community. It was therefore quite important to view the multi-year assessments as being linked with management strategies. The practicality of being able to give useful multi-year advice is closely tied to having more reasonable fishing mortality rates, i.e. lower rates, so that just the basis for pre-

diction would be greatly improved. As long as fisheries operate with very high mortality rates, there would be a need for more frequent advice.

Secondly, regarding the input of a non-expert (the stakeholder), this could be very important. This could be made most rapidly at the national level or at sub-regional levels. There was a need to establish a process to ensure that ICES gets that input most effectively at the proper scale, and that people speak the same language. Concern was also expressed about the slowness with which ICES responds to the issue of the non-fishing sectors' involvement in these processes. Several people had indicated that they see no reason against including people with an environmental interest, but had been slow to do so because of practicalities associated with that. However, it would be advisable not to delay this process too long. One of the major reasons why we want transparency, and engagement from the fishing industry in the process, was to help with the credibility of fisheries science with that particular sector.

The **Delegate of the Netherlands** complimented Niels Axel Nielsen as one of the key people in these important meetings, out of which came very constructive proposals and ideas to improve the advisory structure of ICES. It is obvious that more integrated advice is needed. In Theme Session X there were also examples of how to implement management procedures and management decisions in such a way that they also include the fisheries sectors. For managers and for the scientists involved, as well as ICES, this was of course very resource demanding. He pointed out that the MoUs include a budget statement, but there might be a problem regarding the resources available within ICES to meet all these new requirements or improvements. Some savings could be made by carrying out multi-annual assessments for certain stocks, but judging from the wishes expressed during the last two years, there would be only increasing costs for ICES and for ICES-related people. It was necessary to move forward, increase the client-focussed advice, and increase the quality of the advice, but at the same time one was tied to the price defined within the MoUs. He further questioned if ICES is prepared to re-negotiate the contacts with its clients based on better performance and advice.

The **President** considered these thought-provoking comments and identified two possible means of pursuing them. Firstly, the Council had now agreed to set up a Management Committee for the Advisory Process, which would provide for better coordination and examination of these issues. With respect to the MoUs, they had been signed at different times and certainly in 2002 there will be several for potential renewal or amendment. The opportunities are there to make progress. MCAP will take a careful look at this in terms of what progress had been made and the commitments entered into, and how ICES was evolving in terms of providing responses to the issues and concerns that had

been raised. This will have to remain very high on the list of priorities.

The **Delegate of Canada** pointed out that during the Dialogue meeting the clients were interested in a different balance in the advice ICES is providing. Regarding multi-annual advice for many fisheries resources it takes several years of sustained restrictions in fishing mortality before a change in resource could be detected, which means that reasonable advice on an annual basis could be doubtful. Perhaps ICES has oversold its product and a different category of advice should be given, i.e. of a multi-year nature. Thus, time would be liberated for the broader evaluation discussed during the last two days. To this end it was necessary to provide leadership in whatever negotiations take place so that a better product can be provided by moving to multi-year advice. This could thus be seen as an investment rather than a resistance.

The **Delegate of Belgium** felt that multi-year advice was not realistic for all stocks. The clients request a wide range of expert advice which had to be provided quickly, and in particular for stocks which are in a poor condition. This means that they were not asking for multi-annual advice, but for immediate advice. Therefore, annual assessments are necessary.

The **Delegate of Sweden** wished to return to the question of involving other stakeholders. From the PESCA meeting where representatives from fishermen's organisations, the processing industry and local government were present and where the ICES advice system was discussed extensively, it became evident that there was a lack of transparency and common language. Because of this, there was a rather wide distrust in the system. However, the UK and Denmark reported positive experiences with the ICES system, inasmuch as they were dealing with the issues in advance and not just presenting the results from ACFM at a very late stage.

After further discussion, it was **agreed** that all these issues concerning ways to improve the efficiency and effectiveness of the advisory process should be brought to the attention of MCAP from the outset.

In concluding this agenda item, the **President** emphasised the success with which CGADV had fulfilled its role since its establishment at the Statutory Meeting in Baltimore, USA, in 1997. He reminded the Delegates that the functions of CGADV would now be carried out by MCAP. In asking for a formal motion to that effect, he expressed the great appreciation of ICES to Niels Axel Nielsen for his hard work as Chair of CGADV. He extended the Council's thanks to him and his committee colleagues.

The **Delegate of the USA** endorsed the President's sentiments. He formally proposed that the Council should dissolve CGADV, on the grounds that its re-

sponsibilities would now be taken over by MCAP. The proposal was **agreed** without dissent.

Agenda Item 25 PRELIMINARY REPORT OF THE 12TH ENVIRONMENTAL DIALOGUE MEETING

The Chair of the 12th (Environmental) Dialogue Meeting, Pentti Mätkki, stated that this was the first meeting of its kind on the environmental side. Thus, designing the agenda had not been easy. He felt that the meeting had been very useful. He noted that Doc. C.M./Del:18 only provided an overview of the outcome; a more comprehensive report would be prepared soon.

The participants in the meeting had come from a wide variety of backgrounds; they had said that they had found it to have been productive, and had recommended that such Dialogue Meetings should be repeated. One suggestion as to how this might best be done was to organise seminars or workshops, open to people from outside ICES circles. It was particularly felt that integration was needed, and so ICES should consider having a joint meeting between environmental and fisheries interests.

It was **agreed** that the new Bureau should consider the follow-up to this initiative.

The **President** expressed his appreciation to the Delegation of Germany for hosting the 12th (Environmental) Dialogue Meeting.

Agenda Item 26 PLANS FOR IMPROVED ACCOMMODATION AT ICES HEADQUARTERS

The **General Secretary** gave a brief outline on the progress made with regard to improving the meeting facilities at ICES Headquarters. Plans had been drawn up for four top quality meeting rooms with small can-teen facilities. During the building period, it would be necessary to obtain the use of meeting facilities elsewhere, particularly for the meetings of ACFM and ACME. Meetings of most Assessment Working Groups would be scheduled outside ICES Headquarters. The actual starting date for the rebuilding of the ICES Secretariat is not yet known, but would likely be during the early part of 2001.

Agenda Item 27 REPORT OF THE PUBLICATIONS COMMITTEE

Bill Turrell (UK) presented the Report of the Publications Committee (Doc. C.M. 2000/Del:22) in the absence of the Chair of the Publications Committee (Peter. Boyle).

The *ICES Journal of Marine Science* produces an income and has achieved a wide audience. The Committee recommended that 1) the *ICES Journal of Marine Science's* editorial team be increased by two new editors, 2) a member of the editorial team routinely joins the guest editors for each of the Symposium Proceeding numbers, and 3) the income stream developing from this activity be directed immediately into supporting further improvements in the quality and availability of other ICES publication activities.

Cooperative Research Report series. The Committee is very concerned with this series, which is of very varying quality and scope. The series includes in particular the ACFM and ACME reports. The Committee **recommends** that 1) selected *Cooperative Research Reports* (notably ACFM and ACME reports) be taken out of the series and published in a designated Advisory Reports series, achieving more rapidly a new and more accessible format; 2) that all of the CRR series be made available in a downloadable format from the ICES Web site, and 3) that a policy be developed to support the transition of suitable CRRs to commercial publication, while retaining a distinctive identity. The Publications Committee further suggested that the content be analysed for those reports that could generate an income. For this, a clear policy statement is required.

ICES Identification Leaflets for Plankton and *ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish*. The Publication Committee **recommended** that

. 1) the requirements and priorities for each of these series be formally linked to the work of an established Group or Committee, 2) that the Identification Leaflets and *ICES Techniques in Marine Environmental Sciences* move now to electronic format, available for downloading at no charge from the ICES website, and 3) that consideration be given to placing all back numbers of both series of Identification Leaflets on the Web site, recognising that some of these are overdue for replacement or revision.

ICES Publications and the Electronic Media

The Publications Committee wished to further promote the use of the Web site and other electronic media. ICES needs to quickly move further into publishing in electronic form. The Committee therefore **recommended** that the process of transfer from mainly paper to mainly electronic forms of communications should be put into place now. Furthermore, it **recommended** that the process should be managed by a designated post within the ICES Secretariat, e.g. the new Communications Officer, and that these internal publications of ICES be made freely available from the ICES website in a downloadable form at no charge.

Role of ICES Publications in the Work of the Council

The Publications Committee considers that the ICES publications are still not fulfilling their full potential in disseminating the work of the Council. A key problem is the need to be rapidly responsive to fulfil its role. To achieve this responsiveness, the Committee should be given the ability to implement the policies. Thus, the Publications Committee must be restructured and should include representation from the Science Committees.

The **Delegate of Canada** supported the specific recommendations and also their general trend concerning the role of the Publications Committee.

The **Delegate of Finland** agreed that a policy on the role of the Publications Committee is required. He raised the question of who should draft this policy. **Bill Turrell (UK)** answered that the report did not include any identification of where this policy should come from.

The **Estonian Delegate** requested Bill Turrell to provide some information on which publications are most attractive for the market. He noted that the *ICES Journal of Marine Science* generates some income. Bill Turrell then identified the *Atlas of Fishes in the North Sea* (which had been published as a *Cooperative Research Report*) as one potential income source. He pointed out that the *Cooperative Research Report* series included several other interesting volumes. The **Delegate of Estonia** further remarked that as an element in the policy there could be the identification of which of the *Cooperative Research Reports* would be attractive to the market and which could thereby become a potential source of income.

The **Delegate of USA** concurred with the recommendations, and agreed that closer association with the Science Committees would be a step forward.

Bill Turrell (UK) suggested that the Chairs of the Publications Committee and the Consultative Committee should meet before June and formulate a draft policy statement for consideration by the Bureau at its Mid-Term Meeting in June.

The **President** agreed that the proposal to improve the link between the Council and the Publications Committee deserves positive treatment. This link had, in his view, been too weak. However, he also found that several points required further discussion on the specific implementation, although he agreed with the general direction taken in the report. The Council needs to recognise the importance of the Publications Committee. He concluded that the Council had expressed general support for the proposal to change the role of the Publications Committee, and to endorse the Publications Committee's proposal on the need for recognising and improving the link with the Science Committees and the work of the Council. However, the Council was uncertain on how this could best be done. He sug-

gested that the Bureau at its January 2001 meeting should discuss how best to move forward on these issues. Also, the recommendation on the addition of two editors should be adopted, and the Secretariat should take steps to place the *ICES Cooperative Research Reports* and Identification Leaflets on the ICES Web site.

The **Finnish Delegate** agreed with the President and asked if Bill Turrell (UK), Mike Sissenwine (USA), and Robert Aps (Estonia) would be prepared to present a background paper to the Bureau for discussion at its next meeting. All three indicated that they would be prepared to present such a paper.

Agenda Item 28 ANY OTHER BUSINESS

The **Delegate of France** stated that difficulties have arisen owing to the slow release of the CD-ROM of the papers from the ASC. The Library from IFREMER has held a collection of ICES papers from the early meetings of ICES, and it takes quite a long time to extract papers from the new CD-ROMs. He requested the Council to consider this issue.

The **President** requested the General Secretary to follow up this issue and propose a solution. The question was raised by the **Delegate of Sweden** concerning the late receipt of Documents for the Delegates meeting. He queried whether this was standard practice, as in Sweden there are usually consultations concerning the issues raised, and this had not been possible for many issues.

The **President** stated that holding the Twelfth Dialogue Meeting in early September had introduced an extra workload on the Secretariat which had delayed the preparation of some of the Documents.

There being no other business, the **President** expressed to the Belgian Delegation, and especially to Rudy De

Clerck, the enormous pleasure of the Council for the excellent organisation of the 2000 Annual Science Conference and Statutory Meeting. He asked him to convey his appreciation to his staff.

In reply, **Rudy De Clerck** stated that he has missed information for the media on the outcome of the ASC. There had been many interesting theme sessions, but no information on their outcome had been available for the press. ICES must increase its external visibility and provide material for the press. He stated that he would like to make this one of his jobs on the Bureau to develop this relationship with the press.

The **President** thanked the Council for having given him the opportunity to serve as President for the last three years. He thanked the Secretariat for the service that they have provided during his tenure. He also thanked the members of the Bureau individually for their tremendous encouragement and support during the past three years. He thanked the Council for their support and noted that they had made progress during the past three years, having improved the finances, and approved a new Advisory Structure. He wished Pentti Mälkki well in his new position as President for the next three years. He further noted the impending retirement of Alfred Post (Germany) and Valeri Shleinik (Russia) from the Council. **Alfred Post** stated that he had very much enjoyed the years that he had spent working with ICES.

On behalf of the Council, **Pentti Mälkki** thanked the President for his excellent service to ICES over the past three years.

Wishing all a safe journey home, the **President** closed the meeting at 15.00 hrs on 4 October.

RESOLUTIONS ADOPTED AT THE 2000 ANNUAL SCIENCE CONFERENCE (88TH STATUTORY MEETING)

RESOLUTIONS INVOLVING PUBLICATIONS

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| <p>1A01 The papers On the Evolution of ICES by D. de G. Griffith, Otto Pettersson and the Birth of ICES, by A. Svansson, ICES and Ocean Exploration by W. Wooster, ICES, the Overfishing Problem by J. Jakobsson, and ICES and Environmental Issues by A.D. McIntyre, presented as part of the 1999 Centenary Celebrations at the 1999 ASC, and compiled and edited by the General Secretary, will be published in the <i>ICES Cooperative Research Report</i> series. The estimated number of pages is 100.</p> <p>1C02 The 2000/2001 ICES Annual Ocean Climate Status Summary, edited by W. Turrell (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 20.</p> <p>1C03 The paper on Crustacea, Decapoda: Larvae, II. Dendrobranchiata by A. dos Santos (Portugal) and J. A. Lindley (UK) will be published in the <i>ICES Identification Leaflets for Plankton</i> series (Leaflet No. 186). The estimated number of pages is 20.</p> <p>1C04 The paper on Numerical and Taxonomic Index of ICES Plankton Identification Leaflets, 1939–2000, edited by J. A. Lindley (UK) will be published in the <i>ICES Identification Leaflets for Plankton</i> series (Leaflet No. 187). The estimated number of pages is 15.</p> <p>1C05 The Report of the Workshop on the Dynamics of Growth in Cod [CM 2000/C:12], edited by D Swain (Canada), N. Andersen (Denmark), and</p> | <p>G Ottersen (Norway), 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 110.</p> <p>1E06 A method description for the Determination of δ-aminolevulinic acid dehydratase activity in fish blood by O.Ø. Aspholm and K. Hylland (Norway), 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 15.</p> <p>1E07 A method description for the Measurement of lysosomal membrane stability in selected marine organisms by M. Moore (UK), A. Köhler-Günther (Germany), and D. Lowe (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>1E08 The intersex in the periwinkle and imposex in the netted whelk: a guide to their use as bioindicators of tributyltin pollution by J. Oehlmann, M. Tillmann, and U. Sculte-Oehlmann (Germany), 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 30.</p> |
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RESOLUTIONS INVOLVING SYMPOSIA

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| <p>2BSY01 A Symposium on Fish Behaviour in Relation to Scientific and Fishing Operations will be held in Bergen, Norway in April 2003 with Å. Bjordal (Norway) and S. Walsh (Canada) as Co-Conveners.</p> <p>A Scientific Steering Group of at least 6 persons will be established.</p> <p>The General Secretary will invite FAO to co-sponsor the Symposium.</p> <p>2CSY01 An ICES/PICES/GLOBEC Symposium on The Role of Zooplankton in Global Ecosystem Dynamics: Comparative Studies from World Oceans to be held during the spring 2003, at a location in Europe to be agreed upon, with Roger Harris (UK) and Tsutomu Ikeda (Japan-PICES) as Co-Conveners.</p> | <p>A Scientific Steering Committee will be established with two members nominated by ICES, two by PICES [Tsutomu Ikeda (Japan) and William Peterson (USA)], and two by GLOBEC [Roger Harris (UK) and Serge Poulet (France)] to assist the local organisers in planning the Symposium.</p> <p>The General Secretary will solicit appropriate co-sponsorship.</p> <p>2CSY02 A Symposium on Influence of Climate Change on North Atlantic Fisheries will be held in Bergen, Norway in 2004 with R. Cook (UK), K. Drinkwater (Canada), and H. Loeng (Norway) as Co-Conveners.</p> <p>A Scientific Steering Group consisting of R.R. Dickson (UK), M. Heath (UK), S. Murawski</p> |
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(USA), D. Mountain (USA), G. Stefansson (Iceland), N. Chr. Stenseth (Norway), C. Taggart (Canada), and Ø. Ulltang (Norway) will be established.

The General Secretary will solicit appropriate co-sponsorship.

2CSY02 ICES will co-sponsor the **Conference on the 70th Anniversary and Achievements of the Continuous Plankton Recorder (CPR)** to be held in Edinburgh, UK on 7 August 2001. The ICES representative at the Conference will be Dr R. Dickson (UK).

2DSY01 A Symposium on **The Precautionary Approach to Fisheries Management: Lessons Learned and Future Directions** will be held in Chile in late August-early September 2003 with L. Richards (Canada) and two others (to be decided) as Co-Conveners.

A Scientific Steering Group will be established.

The General Secretary will solicit appropriate co-sponsorship.

2GSY01 ICES will co-sponsor a joint NAFO/CSIRO Symposium on Elasmobranch Fisheries (provisional title) in September 2002 with T. Walker (CSIRO), J. Musick (USA), and P. Walker (Netherlands) as Co-Conveners.

2GSY02 ICES will co-sponsor a NAFO Symposium on **Deep-Sea Fisheries** (Co-Conveners: J Gordon (UK) and T. Koslow (Australia) J. Moore (USA) to be held from 12–14 September 2001 in Havana, Cuba. ICES will be represented on the Steering Committee and at the Symposium by J. Gordon (UK).

RESOLUTIONS INVOLVING MEETINGS OF COMMITTEES, GROUPS, AND WORKSHOPS

DELEGATES

2DEL01 An **Advisory Committee on Ecosystems** [ACE] (Chair: H.R. Skjoldal, Norway) will be established in accordance with C.Res. 2000/4DEL01 and will meet:

A) at ICES Headquarters in August 2001 at dates to be decided by MCAP at Council expense to:

i) respond to requests for advice from the Commissions, other regulatory agencies, and Member Countries,

ii) conduct other relevant business.

With the approval of the General Secretary, the Chair of the Advisory Committee on Ecosystems 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 89th Statutory Meeting to:

i) prepare Terms of Reference, dates, and venues for meetings of groups reporting to ACE in 2002,

ii) conduct other business related to the functioning of ACE.

The Consultations will be open to appointed national experts, Chairs of groups reporting to ACE or their designates, and other experts at the invitation of the Chair of ACE.

2DEL02 A **Bureau Working Group on International Programmes** [BWGIP] (Chair S. Parsons,

Canada) will meet for three days at ICES Headquarters at Council Expense to develop an ICES policy to provide an appropriate framework for ICES involvement in international programmes.

BWGIP will report by 31 May 2001 for the attention of the Mid-Term Meeting of the Bureau.

2DEL03 A **Bureau Study Group to Develop a Salmonid Science Initiative** [BSGDSS] (Chair: Jóhann Sigurjónsson) will work by correspondence in 2001 to:

a) identify the need for a salmonid science initiative in ICES by consulting with appropriate expertise in Member Countries;

b) identify the appropriate organisational structure to stimulate salmonid scientists to participate in ICES, including the possibility of establishing a Salmonid Science Committee;

c) consider whether such an initiative might also be needed for other research areas related to anadromous and catadromous fishes.

BSGDSS will report by 19 January 2002 for the attention of the January meeting of the Bureau, and the Consultative Committee.

The membership of the Group will be the First Vice-President of the Council and Chairs of the Consultative Committee, Living Resources Committee, Resource Management Committee,

- North Atlantic Salmon Working Group, and Working Group on Baltic Salmon and Trout.
- 2DEL04 A **Management Committee for the Advisory Process** [MCAP] (Chair: G. Hubold, Germany) will be established in accordance with C.Res.2000/4DEL01 and will meet at ICES Headquarters from 18-20 January 2001 at Council Expense.
- 2DEL05 A **Centenary Committee** consisting of P. Mäkki, the Delegates of Norway and Denmark, the Chair of the Consultative Committee and the General Secretary, should meet in Copenhagen (at ICES expense) on [dates] to:
- a) Develop plans for the Centenary arrangements in 2001 and 2002;
 - b) Coordinate the Centenary theme days at the 2001 and 2002 Annual Science Conferences. Taking into account the scientific programmes for those conferences to be proposed by the Consultative Committee;
 - c) Prepare for a possible special declaration in conjunction with the acceptance of the Strategic Plan in 2002.

CONSULTATIVE COMMITTEE (A)

- 2A01 The **Consultative Committee** [CONC] (Interim Chair: A. Maucorps, France) will meet at ICES Headquarters from 11–13 June 2001 to:
- a) prepare a draft programme of sessions for the 2001 Annual Science Conference/89th Statutory Meeting (Oslo, Norway), taking into account the titles and abstracts of scientific papers/posters received in response to the January 2001 Call for Papers, for presentation in Open Sessions, Theme Sessions, and the Mini-Symposium;
 - b) review draft resolutions from the Science and Advisory Committees to be approved at the 89th Statutory Meeting;
 - c) consider issues arising from developments in the ICES Advisory Process, including overview of ecosystem issues;
 - d) consider the report of the Bureau Study Group to “Develop a Salmonid Science Initiative” and consider if steps need to be taken relative to the scientific needs for other ANACAT species;
 - e) consider progress in the preparation of Courses in Fish Stock Assessment Techniques;
 - f) review progress in the implementation of the Science Committee Workplans;
 - g) identify strategic issues of relevance to the future work of the Committee and ICES in general;
 - h) review treatment of survey working group reports;
 - i) consider the report of the 12th Dialogue Meeting.

ADVISORY COMMITTEE ON ECOSYSTEMS (ACE)

- 2ACE01 The **Advisory Committee on Ecosystems** [ACE] (Chair: H.R. Skjoldal, Norway) will meet:
- A)** at ICES Headquarters in August 2001 at Council expense to:
- i) respond to requests for advice from the Commissions, other regulatory agencies, and Member Countries,
 - ii) conduct other relevant business.
- With the approval of the General Secretary, the Chair of the Advisory Committee on Ecosystems 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 89th Statutory Meeting to:
- i) prepare Terms of Reference, dates, and venues for meetings of groups reporting to ACE in 2002;
 - ii) conduct other business related to the functioning of ACE.
- The Consultations will be open to appointed national experts, Chairs of groups reporting to ACE or their designates, and other experts at the invitation of the Chair of ACE.
- 2ACE02 A **Working Group on Marine Mammal Population Dynamics and Habitats** [WGMMPH] (Chair: A. Bjørge, Norway) will be established and will meet at ICES Headquarters from 23–27 April 2001 to:
- a) conduct, in response to a request from OSPAR [2001/2.2], the following:

- i) provide a synthesis of the North Sea populations of marine mammals, including consideration of species that have declined or are threatened from human activities;
- ii) provide a synthesis of the health status of marine mammals in the North Sea in relation to the quality of their habitat;
- iii) in liaison with WGECC and SGEAM, provide recommendations for appropriate Ecological Quality Objective (EcoQO) indices for marine mammals based on i) and ii), and develop a proposal for appropriate EcoQOs for North Sea marine mammal populations;
- iv) prepare provisional estimates for the current levels, reference levels, and target levels for the EcoQO indices identified in iii);
- b) update a 1998 review of the impact of fisheries on small cetaceans;
- c) review progress in studies of marine mammal habitat requirements, particularly in relation to exposure to contaminants;
- d) explore possibilities for furthering the research programme on cause-effect relationships between contaminants and population-level effects in seals;
- e) adopt a population simulation model framework whereby the population-level effects of environmental impacts may be assessed;
- f) continue the work to develop a comprehensive database on North Atlantic marine mammal diet composition that can be used by the ICES community to evaluate two-way trophic interactions between marine mammals and fisheries;
- g) evaluate current information on techniques and methodology to estimate seal abundance, particularly grey seals and harbour seals, including stock structure, census (methodologies, techniques, and biases), population growth rates and trends, ageing techniques, mortality, consumption models, and habitat requirements.

WGMMPH will report by 18 May 2001 for the attention of ACE, who will parent the Group, and the Marine Habitat and Living Resources Committees.

ADVISORY COMMITTEE ON FISHERY MANAGEMENT (ACFM)

2ACFM01 **The Advisory Committee on Fishery Management** [ACFM] (Chair: T. Jakobsen, Norway) will meet in accordance with C.Res. 2000/4DEL01:

- A) in plenary at ICES Headquarters (or elsewhere in Greater Copenhagen) from 22–31 May 2001 and from 9–17 October 2001 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 (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 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 Assessment Working Groups;
- h) propose Terms of Reference for 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, Vice-Chair, national members and *ex officio* members of ACFM, and to the Chairs of the Assessment Working Groups. Participation of Working Group Chairs will be limited to a maximum of 4 days;

B) by correspondence in the period 30 April–8 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 24–26 April at ICES HQ. The following will be invited at Council expense: the ACFM Chair, two reviewers [Chair of WGBAST (Tapani Pakarinen, Finland) and a reviewer to be determined by the Chair of ACFM], and the Chair of WGNAS (Niall O'Maoileidigh, 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 3 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 10 May.
- C) for Consultations to be held at national expense in Oslo on 24 September 2001 and at other times as required during the 2001 Annual Science Conference to:
 - a) finalise Terms of Reference, dates, and venues for meetings of groups reporting to ACFM in 2002;
 - b) conduct other business related to the functioning of ACFM.

The Consultations will be open to Delegates, 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.

2ACFM02 The Study Group on the Further Development of the Precautionary Approach to Fishery Management [SGPA] (Chair: R.C.A. Bannister, UK) will be established and meet from 2–5 April 2001 at ICES HQ to:

- 1) review the current status of the Precautionary Approach as implemented by ACFM;
- 2) develop a framework for formulating advice by defining protocols for the establishment of:
 - (a) advice in data-poor situations specifically when advising for

exploitation of the deep-water species;

- (b) advice in data rich situations;
- (c) recovery plans;

3) investigate the use of MSY (F_{MSY} and B_{MSY}) as a biological reference point;

4) the Group should work to provide specific guidance to ACFM.

SGPA will report by 6 April 2001 for the attention of ACFM and to the Resource Management Committee.

2ACFM03 A Study Group on Herring Assessment Units in the Baltic Sea [SGHAUB] will be established (Co-Chairs: E. Ojaveer, Estonia and G. Kornilovs, Latvia) and will meet at ICES Headquarters from 22–25 January 2001 to:

- a) update, review, and evaluate the available information on herring stock components and their migration in the Main Basin of the Baltic Sea (Sub-divisions 25–29, 32);
- b) propose an assessment structure for the herring stocks in Sub-divisions 25-29+32 based on the review done under a);
- c) finalise the compilation of data required for assessing stock components defined under b).

SGHAUB will report by 26 January 2001 for the attention of ACFM and the Resource Management and Baltic Committees.

2ACFM04 The Herring Assessment Working Group for the Area South of 62°N [HAWG] (Chair: M. Basson, UK) will meet in Hamburg, Germany from 13–22 March 2001 to:

- a) assess the status of and provide catch options (by fleet where possible) for 2002 for the North Sea autumn-spawning herring stock in Division IIIa, Sub-area IV, and Division VIIId (separately, if possible, for Divisions IVc and VIIId), for the herring stocks in Division VIa and Sub-area VII, and the stock of spring-spawning herring in Division IIIa and Sub-divisions 22–24 (Western Baltic); in the case of North Sea autumn-spawning herring the forecasts 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 mill tonnes by spawning time in 2002;
- b) assess the status of and provide catch options for 2002 for the sprat stocks in Sub-area IV and Divisions IIIa and VIIId,e;
- c) identify major deficiencies in the assessments;

- d) review the layout of a Quality Handbook and prepare a workplan for writing such a document. A draft of the Quality Handbook shall be reviewed by the Working Group in 2002.

HAWG will report by 29 March 2001 for the attention of ACFM.

2ACFM05 The **Study Group on Discard and By-Catch Information** [SGDBI] (Chair: J. Cotter, UK) will meet at ICES Headquarters from 26–29 March 2001 to:

- a) compile estimates including a measure of their accuracy of discards and/or by-catches of fish and shellfish by fleet and fisheries using protocols defined at the 2000 meeting;
- b) where possible, allocate these estimates to stock units. The Group shall give priority to commercial fish and shellfish stocks.

SGDBI will report by 30 March 2001 for the attention of ACFM and the Resource Management and Living Resources Committees.

2ACFM06 The **Baltic Salmon and Trout Assessment Working Group** [WGBAST] (Chair: T. Pakarinen, Finland) will meet in Pärnu, Estonia from 28 March–6 April 2001 to:

- a) describe the salmon fisheries in the Baltic in 2000;
- b) assess the status of the wild and reared stocks of Baltic salmon according to IBSFC management areas¹ 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 2002 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);

¹ At present the IBSFC TAC management areas for salmon are:

- The Main Basin and the Gulf of Bothnia (Sub-divisions 22–31)
- The Gulf of Finland (Sub-division 32)

- e) evaluate the amount of reared salmon that reach a river mouth having survived the sea life cycle under the present set of fisheries regulations (including the IBSFC agreed TACs);

- f) provide any new information on the state of sea trout stocks;

- g) identify major deficiencies in the assessments in the Baltic;

- h) review the layout of a Quality Handbook and prepare a workplan for writing such a document. A draft of the Quality Handbook shall be reviewed by the Working Group in 2002.

WGBAST will report by 17 April 2001 for the attention of ACFM.

2ACFM07 The **Working Group on North Atlantic Salmon** [WGNAS] (Chair: N. O'Maoileidigh, Ireland) will meet in Edinburgh, UK from 2–11 April 2001 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 2000;
 - ii. report on significant developments which might assist NASCO with the management of salmon stocks;
 - iii. use case studies to illustrate options for taking account of risk in the provision of catch advice and comment on the relative merits of each option;
 - iv. assess the possible reasons for the differences in occurrence of escaped farmed salmon in fisheries and stocks in different areas;
 - v. advise on potential biases in the catch advice resulting from the inclusion of fish farm escapees in the assessment models;
 - vi. provide a compilation of tag releases by country in 2000;
- b) with respect to Atlantic salmon in the North-East Atlantic Commission area:
 - i. describe the events of the 2000 fisheries and the status of the stocks;
 - ii. update the evaluation of the effects on stocks and homewater fisheries of significant management measures introduced since 1991;
 - iii. further develop the age-specific stock conservation limits where possible based upon individual river stocks;

- iv. provide catch options or alternative management advice with an assessment of risks relative to the objective of exceeding stock conservation limits;
- v. update information on by-catch of salmon post-smolts in pelagic fisheries;
- vi. identify relevant data deficiencies, monitoring needs, and research requirements;
- c) with respect to Atlantic salmon in the North American Commission area:
 - i. describe the events of the 2000 fisheries and the status of the stocks;
 - ii. update the evaluation of the effects on US and Canadian stocks and fisheries of management measures implemented after 1991 in the Canadian commercial salmon fisheries;
 - 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. 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 2000 fisheries and the status of the stocks;
 - ii. update the evaluation of the effects on European and North American stocks of the Greenlandic quota management measures and compensation arrangements since 1993;
 - iii. 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;
 - iv. provide catch options or alternative management advice with an assessment of risks relative to the objective of exceeding stock conservation limits;
 - v. evaluate potential causes for changes in the Continent of origin of salmon captured in the West Greenland fishery, including potential changes in marine migration patterns;
 - vi. identify relevant data deficiencies, monitoring needs, and research requirements.

2ACFM08 The **Working Group on *Nephrops* Stocks [WGNEPH]** (Chair: F. Redant, Belgium) will meet in Lisbon, Portugal from 3–11 April 2001 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, started in 1999, on the cross-correspondence between trends in different indices of the state of exploitation of *Nephrops* stocks and to examine possible reasons to any discrepancies;
- c) continue the SGNEPH's work on the potential of alternative assessment techniques (such as Leslie's Depletion Method), and to tentatively apply these methods to those stocks where current length- and age-based assessment techniques fail to perform;
- d) consider the need for a future SGNEPH. If such a group is deemed desirable, to propose TORs, Chair, time, and venue for a meeting;
- e) review the layout of a Quality Handbook and prepare a workplan for writing such a document. A draft of the Quality Handbook shall be reviewed by the Working Group in 2002.

WGNEPH will report by 20 April 2001 for the attention of ACFM.

2ACFM09 The **Baltic Fisheries Assessment Working Group [WGBFAS]** (Chair: M. Plikshs, Latvia) will meet in Gdynia, Poland from 18–27 April 2001 to:

- a) assess the status of and provide catch options (for wide ranges of F_s) for year 2002, medium- and long-term for cod, herring, and sprat stocks in the Baltic by appropriate areas and stock components, including the Gulf of Riga herring as a separate stock component, and taking into account the biological interaction between species;
- b) for herring, exploitation and status should be estimated for those stock components defined by SGHAUB. If possible, this evaluation should include the following areas:
 - Sub-divisions 29S+32
 - Open Sea Herring in Sub-divisions 25–28
 - Coastal Herring in Sub-divisions 25–26;

The need to regulate exploitation by such areas separately should be considered to avoid overfishing of local stock components;

- c) assessments of cod stocks should include a review of the most recent discard information and an evaluation of its effects;
- d) assess the status and provide catch options for year 2002 for the cod stock in the Kattegat and sole stock in Division IIIa;
- e) provide any new information on the state of flatfish stocks in the Baltic;
- f) assess possible changes in maturity ogives of Baltic herring and sprat and evaluate the effects on biological reference points;
- g) assess the cod by-catches in the pelagic fisheries and evaluate the consequences of lowering the present 10% by-catch rule of cod in the herring and sprat fisheries (IBSFC fishing rule 8.3);
- h) consider the need to account for migration of juveniles and mature fish between the western and the eastern cod stock in a recovery plan for one or both of the cod stocks;
- i) review progress in determining precautionary reference points;
- j) identify major deficiencies in the assessments;
- k) review the layout of a Quality Handbook and prepare a workplan for writing such a document. A draft of the Quality Handbook will be reviewed by the Working Group in 2002.

WGBFAS will report by 4 May 2001 for the attention of ACFM.

2ACFM10 The **Northern Pelagic and Blue Whiting Fisheries Working Group** [WGNPBW] (Chair: A. Gudmundsdottir, Iceland) will meet in Reykjavik, Iceland from 18–27 April 2001 to:

- a) assess the status of and provide catch options for 2002 for the Norwegian spring-spawning herring stock;
- b) assess the status of and provide catch options for the 2001–2002 season for the Icelandic summer-spawning herring stocks;
- c) assess the status of capelin in Sub-areas V and XIV and provide catch options for the summer/autumn 2001 and winter 2002 seasons;
- d) assess the status of and provide catch options for capelin in Sub-areas I and II (excluding Division IIa west of 5°W) in 2002;

- e) assess the status of and provide catch options for 2002 and 2003 for the blue whiting stock;
- f) identify major deficiencies in the assessments;
- g) review the layout of a Quality Handbook and prepare a workplan for writing such a document. A draft of the Quality Handbook shall be reviewed by the Working Group in 2002.

WGNPBW will report by 4 May 2001 for the attention of ACFM.

2ACFM11 The **Arctic Fisheries Working Group** [AFWG] (Chair: S. Mehl, Norway) will meet in Bergen, Norway from 24 April–3 May 2001 to:

- a) assess the status of and provide catch options for the year 2002 for the stocks of cod, haddock, saithe, Greenland halibut, and redfish in Sub-areas 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, fixing F at a level that maintains SSB above 500,000 t (B_{pa}) and reducing the fishing mortality to less than $F = 0.42$;
- c) when historic data on maturity and weights become available revisit the appropriateness of the biological reference points for NEA cod;
- d) assess the status of the shrimp stock in the Barents Sea, taking predation by cod into account;
- e) identify major deficiencies in the assessments;
- f) review the layout of a Quality Handbook and prepare a workplan for writing such a document. A draft of the Quality Handbook shall be reviewed by the Working Group in 2002.

AFWG will report by 10 May 2001 for the attention of ACFM.

2ACFM12 The **North-Western Working Group** [NWWG] (Chair: J. Boje, Denmark) will meet in Tórshavn, Faeroe Islands from 24 April to 3 May 2001 to:

- a) assess the status of and provide catch options for 2002 for the stocks of redfish in Sub-areas V, XII and XIV; Greenland halibut in Sub-areas V and XIV; cod in Sub-area XIV, NAFO Sub-area 1, and Divisions Va and Vb; saithe in Divisions Va and Vb; and haddock in Divisions Va and Vb;
- b) for cod, haddock, and saithe in Division Vb, where an effort control management system is in effect, estimate the probability profile

of fishing mortalities which would be generated under the current effort control scheme and provide effort options which have a high probability (> 80%) of realising fishing mortalities in 2002 which would correspond to the fishing mortality identified as being within safe biological limits;

- c) update survey and fishery information on the stocks of redfish in Sub-areas 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 Sub-areas 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) identify major deficiencies in the assessments;
- h) review the layout of a Quality Handbook and prepare a workplan for writing such a document. A draft of the Quality Handbook shall be reviewed by the Working Group in 2002.

NWWG will report by 10 May 2001 for the attention of ACFM.

2ACFM13 **The Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak** [WGNSSK] (Chair: M. Pastoors, Netherlands) will meet in Hamburg, Germany from 19–28 June 2001 to:

- a) assess the status of and provide catch options for 2002 for the following stocks:
 1. cod in Sub-area IV and Division IIIaN (Skagerrak), and Division VIId,
 2. haddock in Sub-area IV and Division IIIa,
 3. whiting and plaice in Sub-area IV, Division IIIa, and Division VIId,
 4. sole in Sub-area IV and Division VIId,

- 5. saithe in Sub-area IV, Sub-area VIa, and Division IIIa.

The assessment should take into account the technical interactions among the stocks due to the mixed-species fisheries and the new management measures coming into force in 2000;

- b) assess the status of and provide catch forecasts for 2002 for Norway pout and sandeel stocks in Sub-area IV and Divisions IIIa and VIa, and identify any needs for management measures (including TACs) required to safeguard the stocks;
- c) 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;
- d) provide the data required to carry out multispecies assessments (quarterly catches and mean weights-at-age in the catch and stock for 2000 for all species in the multispecies model that are assessed by this Working Group);
- e) identify major deficiencies in the assessments;
- f) review the layout of a Quality Handbook and prepare a workplan for writing such a document. A draft of the Quality Handbook shall be reviewed by the Working Group in 2002.

WGNSSK will report by 6 July 2001 for the attention of ACFM.

2ACFM14 **The Working Group on the Assessment of Northern Shelf Demersal Stocks** [WGNSSD] (Chair: M. Armstrong, Northern Ireland, UK) will meet at ICES Headquarters from 14–23 August 2001 to:

- a) assess the status of and provide catch options for 2002 for the stocks of cod, haddock, whiting, anglerfish, and megrim in Sub-area 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 stocks 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;
- d) identify major deficiencies in the assessments;

- e) review the layout of a Quality Handbook and prepare a workplan for writing such a document. A draft of the Quality Handbook shall be reviewed by the Working Group in 2002.

WGNSDS will report by 24 August 2001 for the attention of ACFM.

2ACFM15 The ICES/EIFAC **Working Group on Eels** [WGEEL] (Chair: W. Dekker, Netherlands) will meet at ICES Headquarters, from 28–31 August 2001 to:

- a) provide escapement targets and other biological reference points on European eel for management use (1998 EC request). The Group should:
 - i) assess trends in recruitment and their causes and the effects on stock and yield of the species;
 - ii) investigate the impact of fisheries on spawner escapement in selected systems;
 - iii) define relevant units where escapement targets would be applicable;
 - iv) where information warrants, propose preliminary biologically-based escapement goals for selected systems;
- b) propose management actions leading to the required escapement;
- c) report progress in work on improvements in the scientific basis for advice on management of European eel fisheries; *inter alia* on
 - i) development of harvest rate models for eel fisheries in data-rich systems;
 - ii) assessment of density-dependent processes (growth and mortality) and their impact on spawner escapement;
 - iii) development of reference points for management use in data-poor systems;
 - iv) development of procedures to verify effects of eel fisheries management measures, in data-rich and data-poor systems;
 - v) assessment of the (positive) impacts of management measures not directly related to exploitation, e.g. fish passes, habitat improvement, re-stocking, etc.

WGEEL will report by 1 September 2001 for the attention of ACFM.

2ACFM16 The **Pandalus Assessment Working Group** [WGPAND] (Chair: B. Sjöstrand, Sweden) will meet in Charlottenlund, Denmark from 28–31 August 2001 to:

- a) assess the status of the stocks of *Pandalus borealis* in the North Sea, Skagerrak, and

Kattegat and provide catch options for 2002 taking predation mortality on *Pandalus* stocks into account;

- b) review progress in determining precautionary reference points;
- c) continue the work on determining the criteria for ageing;
- d) identify major deficiencies in the assessments;
- e) review the layout of a Quality Handbook and prepare a workplan for writing such a document. A draft of the Quality Handbook shall be reviewed by the Working Group in 2002.

WGPAND will report by 1 September 2001 for the attention of ACFM and the Living Resources Committee (90th Statutory Meeting).

2ACFM17 The **Working Group on the Assessment of Southern Shelf Demersal Stocks** [WGSSDS] (Chair: A. Biseau, France) will meet at ICES Headquarters from 4–13 September 2001 to:

- a) assess the status of and provide catch options for 2002 for stocks of cod, whiting, plaice, and sole in Divisions VIIe-k, haddock in Divisions VIIb-k, sole in Sub-area VIII, hake in Sub-areas III, IV, VI, VII, VIII, and IX, anglerfish and megrim in Sub-areas VII, VIII, and IX, taking into account technical interactions in mixed species fisheries;
- b) identify major deficiencies in the assessments;
- c) review the layout of a Quality Handbook and prepare a workplan for writing such a document. A draft of the Quality Handbook shall be reviewed by the Working Group in 2002.

WGSSDS will report by 14 September 2001 for the attention of ACFM.

2ACFM18 The **Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine, and Anchovy** [WGMHSA] (Chair: D. Skagen, Norway) will meet at ICES Headquarters from 4–13 September 2001 to:

- a) assess the status of and provide catch options for 2002 for the stocks of mackerel and horse mackerel (defining stocks as appropriate);
- b) assess the status of and provide catch options for 2002 for the sardine stock in Divisions VIIIc and IXa; catch options for 2002 should be provided separately by division;
- c) assess the status of and provide catch options for 2002 for the anchovy stocks in Sub-area VIII and Division IXa;

- d) review progress in determining precautionary reference points;
- e) for sardine update information on the stock identification, composition, distribution, and migration in relation to oceanographic effects;
- f) identify major deficiencies in the assessments;
- g) review the layout of a Quality Handbook and prepare a workplan for writing such a document. A draft of the Quality Handbook shall be reviewed by the Working Group in 2002.

WGMHSA will report by 14 September 2001 for the attention of ACFM and the Living Resources Committee (90th Statutory Meeting).

2ACFM19 The **Joint ICES/NAFO Working Group on Harp and Hooded Seals** [WGHARP] (Chair: T. Haug, Norway) will work by correspondence in 2001 to:

- a) plan for a meeting in 2002 and report the results of this planning to ACFM at its October 2001 meeting.

WGHARP will report by 31 May 2001 for the attention of ACFM and the Resource Management and Living Resources Committees.

2ACFM20 A **Study Group on the Evaluation of Current Assessment Procedures for North Sea Herring** (SGEHAP) (Chair: J. Simmonds, UK) will be established and work by correspondence in 2001 to:

- a) propose and evaluate an assessment procedure that is less restrictive in the separability assumption than methods in current use (ICA);
- b) evaluate the usefulness of the so-called "split factor" in predicting abundance of the stock components in Division IIIa and in Sub-area IV;
- c) review the procedures used for generating fleet-based selection patterns;
- d) based on the reviews done under b) and c) propose and evaluate a prediction procedure (both short and medium term) that meets management needs for an area-based advice. Implement and verify a new prediction computer program;
- e) revisit the basis for the biological reference points implemented in the management plan for North Sea (autumn spawning) herring.

SGEHAP will make its report available to HAWG and will report by 30 April 2001 for the attention of ACFM.

2ACFM21 The **Study Group on the Biology and Assessment of Deep-Sea Fisheries Resources** will be re-established as the **Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources** [WGDEEP] (Chair: O.A. Bergstad, Norway) and will work by correspondence in 2001 to:

- a) compile the available data on landings of deep-water species, including blue ling, ling, and tusk, by ICES Sub-area 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;
- e) produce a document that discusses the applicability for assessment purposes of different types of survey for different types of deep-water species and different hydrographic and bathymetric conditions. The document shall include for each survey type (long line, bottom and pelagic trawl, acoustic, egg production estimation, etc.) a discussion of their advantages and disadvantages;
- f) evaluate for each deep-water species of major importance the most appropriate survey type(s) for abundance estimation.

WGDEEP will report by 17 April 2001 for the attention of ACFM.

2ACFM22 The **Study Group on Baltic Herring and Sprat Maturity** [SGBHSM] (Chair: H. Müller, Germany) will work by correspondence in 2001 to:

- a) compile the available data on Baltic herring and sprat maturity ogives by age and length on Sub-division basis and submit this compilation to WGBFAS;
- b) investigate the possible changes in maturity ogives during the recent decades.

SGBHSM will make its report available to WGBFAS and will report by 1 April 2001 for the attention of ACFM.

2ACFM23 The **Study Group on Sea Bass** [SGBASS] (Chair: M. Pawson, UK) will be established and will work by correspondence in 2001 to:

- a) compile information on European fisheries in which sea bass are taken;
- b) compile information pertinent for the assessment of sea bass, including

information that can be used to identify unit stocks of sea bass;

- c) where possible, present assessments of sea bass stocks in European waters and identify their stock conservation requirements.

SGBASS will report by 17 April 2001 for the attention of ACFM and the Living Resources Committee.

ADVISORY COMMITTEE ON THE MARINE ENVIRONMENT (ACME)

2ACME01 A **Planning Group for the Ecological Quality Objective Requests** [PGEQO] (Chair: H.R. Skjoldal, Norway) will be established and will meet at ICES Headquarters on 23 October 2000 to:

- a) develop a framework which would specify the types of information that WGMMPH and WGSE should compile and document as fully as possible to respond to the OSPAR EcoQO requests [OSPAR 2001/2.2 and OSPAR 2001/2.3].

PGEQO will report by 30 November 2000 for the attention of ACME, ACE, and the Marine Habitat and Resource Management Committees.

2ACME02 A **Workshop on Deep-Seabed Survey Technologies** [WKDSST] (Chair: T. Noji, Norway) will be held in Bergen, Norway from 29–31 January 2001 to:

- a) compile and review information on deep-sea survey technologies to map the seabed and benthic habitats;
- b) identify and compile information on existing data sets on mapping of the seabed and benthic habitats;
- c) consider harmonisation or standardisation of survey technology, data processing, interpretation, and mapping products (GIS) for future applications;
- d) consider collaboration and possible joint projects between ICES Member Countries on marine habitat mapping field activities.

WKDSST will report by 23 February 2001 for the attention of ACME and the Marine Habitat Committee.

2ACME03 The **ICES/HELCOM Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea** [SGQAB] (Chair: G. Martin, Estonia) will meet at ICES Headquarters from 12–14 February 2001 [HELCOM 2001/1] to:

- a) review the outcome of the 2000 phytoplankton training course;

- b) review the progress in the updating of the COMBINE Manual for biological variables;

- c) review the progress in the work of SGPHYT;

- d) review experience in the use of the ICES data reporting formats and data input programs by HELCOM laboratories;

- e) evaluate the results obtained from BEQUALM and the HELCOM phytoplankton intercalibration;

- f) evaluate the results of the initial experience in using the COMBINE phytobenthos monitoring guidelines based on the questionnaire prepared by Finland (S. Bäck);

- g) review the outcome of the questionnaire concerning the experience associated with the use of new primary production methods in the HELCOM area;

- h) review the results of updating the taxonomic lists for the Baltic Sea area made by BEWG, SGPHYT, WGPE, and WGZE and investigate the possibilities of establishing web pages, including the taxonomic lists and identification assistance material;

- i) review the development of QA procedures for the COMBINE coastal fish monitoring programme;

- j) continue the activities of updating the manual for chlorophyll *a* measurements, with MCWG and WGPE;

- k) hold a joint session with ICES/HELCOM SGQAC concerning topics of mutual interest, e.g., QA procedures in manuals for chlorophyll *a* measurements and phytoplankton primary production;

- l) continue the work on updating the manual for primary production measurements;

- m) continue the organization of intercalibration and intercomparison exercises covering all core and main biological variables of the COMBINE programme in cooperation with

other relevant ICES Steering and Working Groups;

- n) meet jointly with SGQAE on the development of QA procedures for the OSPAR area.

SGQAB will report by 28 February 2001 for the attention of the ACME and the Baltic, Marine Habitat, and Oceanography Committees.

2ACME04 The ICES/HELCOM Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea [SGQAC] (Chair: E. Lysiak-Pastuszak, Poland) will meet at ICES Headquarters from 12–15 February 2001 [HELCOM 2001/1] to:

- a) finalise the technical notes on PAHs and organochlorines;
- b) finalise the technical note on organic carbon;
- c) review the updated notes on suitable CRMs, method validation, contaminants in marine fish, and hydrography;
- d) meet with SGQAB to discuss common interests, such as QA procedures in manuals for chlorophyll *a* measurements and phytoplankton primary production;
- e) consider whether the general part of the QA guidelines is consistent with the new ISO 17025 (if it has been issued);
- f) develop criteria for the quality control of chemical data, in cooperation with MCWG, and based on these criteria, review the quality of chemical data submitted for the COMBINE programme initially as a test case reviewing contaminants data for thematic assessment [HELCOM 2001/2].

SGQAC will report by 28 February 2001 for the attention of ACME and the Baltic, Marine Habitat, and Oceanography Committees.

2ACME05 The ICES/OSPAR Steering Group on Quality Assurance of Biological Measurements Related to Eutrophication Effects [SGQAE] (Chair: H. Rees, UK) will meet at ICES Headquarters from 13–16 February 2001 [OSPAR 2001/1.1] to:

- a) finalise a draft of OSPAR/ICES guidelines for QA of biological measures;
- b) review progress in the application of JAMP guidelines and associated QA activities, especially the outcome of workshops/intercomparison exercises, within Member Countries;
- c) further evaluate criteria for judging the acceptability of biological data in international monitoring programmes, at the field sampling, laboratory analysis, and data entry stages;

- d) compile a programme of planned biological workshops/intercalibration exercises/ring tests, etc., relevant to ICES/OSPAR activities, covering the years 2001 and 2002;

- e) review the outcome of activities of SGPHYT, and of other comparable efforts in compilation of species lists, with emphasis on QA aspects;

- f) follow up results obtained with the EC BEQUALM project, with the aim of producing recommendations relevant to JAMP guidelines;

- g) consider the merit of circulation of a questionnaire to laboratories in the OSPAR area concerning QA activities in relation to biological measures and, as appropriate, to draft a set of specific questions;

- h) meet jointly with SGQAB, with a view to a merger of the two groups.

SGQAE will report by 28 February 2001 for the attention of ACME and the Marine Habitat and Oceanography Committees.

2ACME06 A Planning Group for a Workshop on Ecosystem Models [PGEM] (Chair: C. Frid, UK) will meet at ICES Headquarters from 6–8 March 2001 to:

- a) specify the ecosystem models whose performance would be evaluated at a proposed Workshop to be held in 2002;
- b) specify the data sets that need to be available for the Workshop, to allow the performance of the ecosystem models to be evaluated in usefully rigorous ways;
- c) specify the properties of the ecosystems whose status will be “monitored” and contrasted across models;
- d) develop a workplan, with specific tasks and deadlines, that, if implemented, will maximise the likelihood that the items specified in a) to c) will be available at the start of the Workshop.

PGEM will report by the 30 March 2001 for the attention of ACME, the Marine Habitat Committee, and ACE.

2ACME07 The ICES/IOC/IMO Study Group on Ballast and Other Ship Vectors [SGBOSV] (Chair: S. Gollasch, Germany) will meet in Barcelona, Spain from 19–20 March 2001 to:

- a) assess the many different types of ship vectors (including, but not limited to, the list presented in the 2000 SGBOSV Report), with specific attention to determining which of these vectors have been quantitatively sampled in recent years, and whether data exist to assess their relative importance across a spectrum of vessel types, voyage

lengths, voyage routes, seasonal changes, and other pertinent variables;

- b) prepare a detailed review, with emphasis on activities in ICES Member Countries, but with attention to other global activities, on the:
 - i) status of ballast water and sediment biological and ecological research, through the participation of representatives from Member Countries and invited scientists from major ballast water research groups in the world;
 - ii) development of ballast water control and management technologies;
 - iii) relationship between ballast water movement and the invasion of exotic marine organisms, including updates on the latest ballast-mediated invasions globally, particularly relative to those species that are now invasive in other regions of the world and that are ballast-transportable but have not yet arrived in Member Countries.

SGBOSV will report by the 20 April 2001 for the attention of ACME and the Mariculture and Marine Habitat Committees.

2ACME08 The **Working Group on Introductions and Transfers of Marine Organisms [WGITMO]** (Chair: S. Gollasch, Germany) will meet in Barcelona, Spain, from 21–23 March 2001 to:

- a) develop an information brochure on the current issues surrounding exotic species invasions, and the impending potential threat of future invasions, to be distributed to ICES Member Countries and to be offered on the ICES website; these materials could also be distributed in the form of species-specific information bulletins, sheets, or posters, focusing on widespread and still spreading exotic species (such as *Hemigrapsus*, *Undaria*, and *Sargassum*) or on exotic species which are less well known to the public (such as the snails *Rapana* and *Ocenebrellus*, and the American lobster); this effort would include a special advisory report on *Rapana* as discussed and approved by ICES in 1999;
- b) carry out a review of previous National Reports (since 1992) to determine whether the recorded incidents of introduced species, in terms of both their geographical spread and their abundance, have been increasing in recent years and assess the consequences and significance of these introductions;
- c) review and report on the status of databases on introduced species that have been developed on a regional basis, such as the databases developed by BMB, CIESM, and

any others that are in the process of development, in order to improve communication and the dissemination of information within and between ICES Member Countries and to inform other groups such as HELCOM where up-to-date information on introduced species can be found;

- d) develop a standardised reporting format for the collection of data on non-indigenous species, as a matter of high priority;
- e) finalize the “Directory of Dispersal Vectors of Exotic Species” to be published in the *ICES Cooperative Research Report* series;
- f) review the ICES Code of Practice on the Introductions and Transfers of Marine Organisms, with a view to updating its applicability in the light of issues associated with importation and transfers of species intended for such purposes as the aquarium trade, the bait industry, or for immediate consumption, that can result in the release in the wild of such species and any accompanying organisms, including pests, parasites, and disease agents;
- g) report on the current status of fish, shellfish, algal, and other introductions in and between Member Countries, through:
 - i) the submission of the National Reports, to include new information on genetically modified organisms and the use of any biocontrol agents,
 - ii) continuing to review the status of selected current invasions, including a) the status of the invasion of the snail *Rapana* in Atlantic America, France, and the Mediterranean, with a focus on producing an “Alert Sheet” to be distributed to ICES Member Countries, b) the continued spread of the kelp *Undaria* in France, Italy, Spain, Belgium, UK, the Netherlands, and other Member Countries, c) the spread of the crabs *Hemigrapsus sanguineus* and *Hemigrapsus penicillatus*, d) the status of the zebra mussel *Dreissena polymorpha* in Ireland and other countries, e) the status of the water flea *Cercopagis pengoi*, especially any further spread in the Baltic Sea and the Great Lakes, and f) the snail *Ocenebrellus inornatus* in France,
 - iii) continuing to review the potential risks from world-wide trade in live aquatic organisms for the food trade, for the aquarium and ornamental trade, and as live bait for recreational fishing,
 - iv) discussing the preparation of a new *ICES Cooperative Research Report* entitled

“Status of Introductions, 1992–2001” to summarise the new species introduced both intentionally and unintentionally in the past decade,

- v) revise the structure of the National Reports so as to include the full range of vectors involved in the introduction and transfer of marine organisms and the possible inclusion of updated summaries of the introduced and transferred species in Member Countries,
- vi) based on the above, provide information on the consequences of key introductions and evaluate their significance.

WGITMO will report by the 27 April 2001 for the attention of ACME and the Mariculture and Marine Habitat Committees.

2ACME09 The **Working Group on Ecosystem Effects of Fishing Activities** [WGECO] (Chair: J. Rice, Canada) will meet from 23 April to 2 May in Copenhagen, Denmark to:

- a) consider the application of habitat classification and mapping (including GIS) to integrated environmental management incorporating fishing effects;
- b) in response to the request from OSPAR [OSPAR 2001/2.2], working with the Working Group on Marine Mammal Population Dynamics and Habitats (WGMMPH) and SGEAM, and taking account of the reports and background documents of the Oslo Workshop on the Ecosystem Approach and the Scheveningen Workshop on EcoQOs,
 - i) provide recommendations for appropriate Ecological Quality Objective indices for marine mammals, and suggestions for appropriate Ecological Quality Objectives for North Sea mammal populations,
 - ii) prepare provisional estimates for the current levels, reference points, and targets for the Ecological Quality Objective indices identified in i);
- c) in response to the request from OSPAR [OSPAR 2001/2.3], working with the Working Group on Seabird Ecology (WGSE) and SGEAM, and taking account of the reports and background documents of the Oslo Workshop on the Ecosystem Approach and the Scheveningen Workshop on EcoQOs,
 - i) provide recommendations for appropriate Ecological Quality Objective indices for North Sea seabird populations, and

suggestions for appropriate Ecological Quality Objectives for North Sea seabird populations,

- ii) prepare provisional estimates for the current levels, reference points, and targets for the Ecological Quality Objective indices identified in i);
- d) implement the workplan outlined in Section 8.2 of the 1999 Report of the Working Group on Ecosystem Effects of Fishing Activities (ICES CM 2000/ACME:02), to the fullest extent possible, with the objective of further developing testable hypotheses for evaluating which components of the marine ecosystem are most vulnerable to trawl impacts;
- e) based on previous considerations of community metrics and ecosystem reference points, provide recommendations on the development of EcoQOs for fish and benthic communities.

WGECO will report by 18 May 2001 for the attention of the Advisory Committees to be decided by MCAP and the Marine Habitat, Living Resources, and Resource Management Committees.

2ACME10 The **Advisory Committee on the Marine Environment** [ACME] (Chair: Stig Carlberg, Sweden) will meet in accordance with C.Res.2000/4DEL01:

- A) at ICES Headquarters from 4 to 9 June in 2001 at Council expense to:
 - i. respond to requests for advice from the Commissions, other regulatory agencies, and Member Countries,
 - ii. conduct other relevant business.
- 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 89th Statutory Meeting to:
 - i) prepare Terms of Reference, dates, and venues for meetings of groups reporting to ACME in 2002,
 - ii) conduct other business related to the functioning of ACME.

The Consultations will be open to appointed national experts, Chairs of groups reporting to ACME or their designates, and other experts at the invitation of the Chair of ACME.

FISHERIES TECHNOLOGY COMMITTEE (B)

2B01 The **Study Group on Mesh Measurements Methodology** [SGMESH] (Chair: R. Fonteyne, Belgium) will meet in Seattle (USA) from 21–22 April 2001 to:

- a) advise on improvements and further standardisation of current mesh measurement practices in view of the netting types now in use in ICES Member Countries;
- b) consider whether the current definition of mesh size is still appropriate for scientific and industrial purposes;
- c) compile an inventory of commercially available netting associated with the selectivity process, identifying the fisheries in which they are used;
- d) consider the need to define groups of netting types for which the same measurement conditions (e.g. tension) can be applied;
- e) propose the specification of a suitable mesh measurement methodology and the conditions under which mesh measurements for all fishing gears in the ICES area are made.

SGMESH will report by 21 May 2001 for the attention of the Fisheries Technology Committee.

2B02 A **Study Group on Target Strength Estimation in the Baltic Sea** [SGTSEB] (Chair: F. Arrhenius, Sweden) will be established and will meet in Seattle, USA from 22–23 April 2001 to:

- a) prepare and disseminate as soon as possible a protocol for TS measurements on the Baltic herring, based upon the state of the art and especially the recommendations of the *Cooperative Research Report* on TS measurements, 1999), adapting these recommendations to the special case of the Baltic Sea;
- b) establish a list of the main factors affecting the herring TS and study the effects through comparative analysis and measurements on various herring stocks (e.g. Baltic and Norwegian spring spawning herrings);
- c) collate the existing information and measurements on herring TS;
- d) apply modelling methods on the case of the herring and compare their results to the existing information;
- e) measure the variability of TS *in situ* under various conditions (day-night, winter-summer, etc.) using databases available from WGFAST members;

- f) encourage experimental measurements through conventional and non-conventional methods.

SGTSEB shall make its report available to WGFAST and will report by 22 May 2001 for the attention of the Fisheries Technology and Baltic Committees.

2B03 A **Planning Group on the HAC Data Exchange Format** [PGHAC] (Chair: D. Reid, UK) will be established and will meet in Seattle, USA on 23 April 2001 to:

- a) continue to work on the HAC format in order to adapt it to the latest versions of equipment and to improve it;
- 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.

PGHAC will make its report available to WGFAST and will report by 23 May 2001 for the attention of the Fisheries Technology Committee.

2B04 A Joint Session of the **Working Group on Fishing Technology and Fishing Behaviour** [WGFTFB] and the **Working Group on Fisheries Acoustics Science and Technology** [WGFAST] (Chairs: Y. Simard, Canada and D. Somerton, USA) will be held in Seattle, USA on 25 April 2001 to:

- a) discuss the impact of fish behaviour on accuracy and precision of stock assessment surveys;
- b) discuss the potential for acoustic techniques to provide information about fish behaviour in a wider sense which may be of use in management and assessment, as well as being of biological and ecological interest.

WGFTFB/WGFAST will report by 24 May 2001 for the attention of the Fisheries Technology Committee.

2B05 The **Working Group on Fishing Technology and Fish Behaviour** [WGFTFB] (Chair: D. Somerton, USA) will meet in Seattle, USA from 23–24 and from 26–27 April 2001 to:

- a) review methods to reduce the variance of abundance indices obtained from assessment surveys using fixed and mobile fishing gears;
- b) evaluate the selection properties for Baltic Cod trawls (selection window and cod-end) using double-nettings made of twine exceeding ca. 4 mm in diameter [IBSFC];

- c) consider current studies aimed at reducing by-catch and sea bed impact in fisheries;
- d) consider the relationship between fishing mortality and fishing effort, especially the variables describing effort.

WGFTFB will report by 24 May 2001 for the attention of the Fisheries Technology Committee and ACFM.

2B06 The **Working Group on Fisheries Acoustics Science and Technology** [WGFAST] (Chair: Y. Simard, Canada) will meet in Seattle, USA on 24 April and from 26–27 April 2001 to:

- a) review current techniques in acoustic methods of species identification;
- b) review ecosystem studies based on acoustic survey data;
- c) evaluate the effect of fish avoidance during surveys.

WGFAST will report by 25 May 2001 for the attention of the Fisheries Technology Committee.

OCEANOGRAPHY COMMITTEE (C)

2C01 The **Study Group on Incorporation of Process Information into Stock Recruitment Models** [SGPRISM] (Chair: C. O'Brien, UK) will meet in Lowestoft, UK from 23–26 January 2001 to:

- a) investigate and evaluate medium-term projection methodology for use in fishery assessment, taking account of characterisations (in space/time) of historical patterns in recruitment and the environment for specific case studies (cod and anchovy);
- b) incorporate realistic variability in the parameters of management simulation models and evaluate more fully the potential of environmental studies to impact on management procedures;
- c) investigate the variability and predictability of environmental conditions known or supposed to affect the dynamics of fish populations;
- d) consider the research activities of the STEREO project and investigate how the resultant information on the age, size, and spatial structure of the North Sea/West of Scotland cod and haddock stocks should be incorporated into the extant methodology of stock assessment and projections.

SGPRISM will make its report available to WGRP and report by 19 February 2001 for the attention of the Oceanography and Resource Management Committees.

2C02 A **Study Group on Modelling of Physical/Biological Interaction** [SGMPI] (Chair: C. Hannah, Canada) will be established and will meet in La Rochelle, France from 5–7 March 2001 to:

- a) review capabilities of existing coastal models and to consider the incorporation of biological processes and the comparison with measurements of species specific distributions and small scale structures;

- b) propose a strategy for continued model development for the understanding and forecasting of physical/biological/chemical interactions (e.g. single species blooms and contaminants);
- c) review existing observational methodologies to support modelling and understanding of physical/biological interactions.

SGMPI will report by 29 March 2001 for the attention of the Oceanography Committee.

2C03 The **ICES/IOC Working Group on Harmful Algal Bloom Dynamics** [WGHABD] (Chair: K. Kononen, Finland) will meet in Dublin, Ireland from 12–16 March 2001 to:

- a) collate and assess national reports and update the decadal mapping of HABs, and summarize the information in the harmful algae event database (HAEDAT) on a regional, temporal, and species basis;
- b) evaluate the modified harmful event report form;
- c) continue examining the possible ways of analysing historical data and fossil records;
- d) evaluate and assess the use of remote sensing and *in situ* optical sensing technology in HAB dynamics studies;
- e) discuss the potential sensitivity of HABs to climate changes;
- f) review the implementation of the GEOHAB research programme in the ICES area;
- g) prepare a resolution for a workshop, possibly co-sponsored by regional programmes such as GEOHAB, GLOBEC, and GOOS, on “Real Time Observation Systems Applied to Harmful Algal Bloom Dynamics Studies and Global Ecosystem Functioning”;
- h) report and discuss new findings.

WGHABD will report by 9 April 2001 for the attention of the Oceanography Committee and ACME.

2C04 The **Working Group on Seabird Ecology** [WGSE] (Chair: M. Tasker, UK) will meet at ICES Headquarters from 16–19 March 2001 to:

- a) respond to the following requests from OSPAR [OSPAR]:
 - i) provide a synthesis of the status of North Sea populations of seabirds, including consideration of species that have declined or are threatened by human activities;
 - ii) consider the use of seabirds as indicators for environmental quality and short-term and long-term ecosystem effects;
 - iii) provide recommendations for appropriate EcoQO indices for seabirds based on i) and ii) and make suggestions for appropriate EcoQOs for North Sea seabird populations (with WGECO and SGEAM);
 - iv) prepare provisional estimates for the current levels, reference levels, and target levels for the EcoQO indices identified (with WGECO and SGEAM).
- b) examine the practicality and desirability of monitoring other aspects of seabird life history than those presently monitored;
- c) review interactions between mariculture and birds in the ICES area;
- d) compile a first model of food consumption by seabirds for the entire ICES area;
- e) assess the inter-sessional work of continuing to add to the database of seabird diet composition in the ICES area;
- f) further develop ideas for meetings that might be held concurrently with other Working Groups in 2003.

WGSE will report by 16 April 2001 for the attention of the Oceanography, Marine Habitat and Mariculture Committees and ACME.

2C05 The **Working Group on Oceanic Hydrography** [WGOH] (Chair: W. Turrell, UK) will meet in Reykjavik, Iceland from 19–21 March 2001 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) examine the potential predictability of ocean climate;

- d) re-analyse the 1920–1950 warm period in the North Atlantic;
- e) review new climatologies for inclusion in the ICES Annual Ocean Climate Status Summary (IAOCSS);
- f) evaluate relevance of climatological and time series products prepared by the ICES Oceanographic Data Centre as potential input to the Ocean Climate Status Report;
- g) review progress during 2000/2001 of the ICES SGOOS;
- h) discuss underway ADCP measurements;
- i) review the preparations for the Symposium on “Hydrobiological Variability in the ICES Area, 1990–1999”;
- j) prepare educational / information material for the ICES web site;

WGOH will report by 23 April 2001 for the attention of the Oceanography Committee and ACME.

2C06 The **Working Group on Zooplankton Ecology** [WGZE] (Chair: L. Valdés, Spain) will meet in Bergen, Norway from 26–29 March 2001 to:

- a) update results from Standards Sections and Stations and consolidate inputs from Member Countries into the Summary status report on zooplankton in the ICES area;
- b) continue discussion on the selection, interpretation, and validation of biological indices and data produced on a routine basis for the fisheries and environmental assessment groups;
- c) finalise the compilation of results, publications, and other material (video documentation of the work at sea, and images) from the June 1993 Sea-going Workshop in Storfjorden and consider the edition of a CD-ROM to be distributed by ICES at a nominal charge;
- d) report and evaluate the results of the workshop on taxonomy of calanoids held in Terramare (Germany) in 2000;
- e) review and evaluate progress in the organisation of the forthcoming ICES/PICES/GLOBEC Symposium;
- f) prepare and formulate key questions requiring interdisciplinary dialogue for a possible joint meeting of the Oceanography Committee’s Working Groups in 2002;
- g) discuss in a joint meeting with the Working Group on Phytoplankton Ecology the following major topics of common interest:
 - i) limits to modelling phytoplankton - zooplankton interaction;

- ii) how do characteristics of phytoplanktonic diet (size, morphology, physiological condition, toxicity) influence zooplankton ingestion rates, fecundity, viability, somatic growth, and reproduction? (focussed to organism level when possible);

- iii) can a collapse in grazing pressure lead to symptoms of eutrophication?

- iv) ways of improving the phytoplankton and zooplankton components in GOOS; 2C08

- v) consider the scientific and operational merits of inclusion of, respectively, primary production measures and zooplankton studies in JAMP eutrophication monitoring programmes;

- vi) consider the possibility of merging.

WGZE will report by 24 April 2001 for the attention of the Oceanography Committee and ACME.

2C07 The **Working Group on Phytoplankton Ecology** [WGPE] (Chair: D. Mills, UK) will meet in Bergen, Norway from 28–30 March 2001 to:

- a) review the reports of SGQAB/SGQAE;
- b) elaborate the outcome of the work of the Study Group on an ICES/IOC Microplankton Protist List [SGPHYT];
- c) identify appropriate web links containing data products of interest to the ICES community;
- d) prepare a draft resolution for a workshop on the role of anthropogenic forcing in planktonic ecosystem change to be carried out in 2002;
- e) develop a proposal for a joint mesocosm experiment dependant on identification of appropriate mesocosm facilities;
- f) discuss in a joint meeting with the Working Group on Zooplankton Ecology the following major topics of common interest:
 - i) limits to modelling phytoplankton - zooplankton interaction
 - ii) how do characteristics of phytoplanktonic diet (size, morphology, physiological condition, toxicity) influence zooplankton ingestion rates, fecundity, viability, somatic growth and reproduction? (focussed to organism level when possible).
 - iii) can a collapse in grazing pressure lead to symptoms of eutrophication?
 - iv) ways of improving the phytoplankton and zooplankton components in GOOS;

- v) consider the scientific and operational merits of inclusion of, respectively, primary production measures and zooplankton studies in JAMP eutrophication monitoring programmes;

- vi) consider the possibility of merging.

WGPE will report by 24 April 2001 for the attention of the Oceanography Committee and ACME.

The **Working Group on Marine Data Management** [WGMDM] (Chair: R. Gelfeld, USA) will meet in Birkenhead, UK from 2–5 April 2001 to:

- a) quantitatively assess the last five years data (1996-2000) sent to the ICES Service Hydrographique by each Member Country, identify problems and suggest solutions;
- b) investigate how ICES Member Countries can contribute most effectively to the next phase of the IOC Global Oceanographic Data Archaeology and Rescue (GODAR) project;
- c) continue to critically evaluate the guidelines for data management and exchange developed inter-sessionally for the following data types: moored current meter data, shipboard and moored ADCP, CTD, XBT/XCTD, sea level, surface underway measurements, nutrients, oxygen, and chlorophyll;
- d) report on parameter dictionaries, common taxonomic coding systems, and XML formats used in ICES Member Countries and evaluate present ROSCOP system to see how these new metadata procedures can change and improve it.

WGMDM will report by 30 April 2001 for the attention of the Oceanography Committee and ACME.

2C09 The **Working Group on Recruitment Processes** (Co-Chairs: P. Pepin, Canada and R.D.M. Nash, UK) will work by correspondence in 2001 to:

- a) review multidisciplinary projects dealing with recruitment research, with attention to providing a synthesis of the projects and highlight unresolved issues which deserve further consideration;
- b) consider the results of the SGPRISM's examination of the STEREO project, along with concurrent and subsequent investigations;
- c) review the development of new approaches or techniques used in the study of factors and processes that influence the development and survival of fish eggs and

larvae in relation to recruitment or the formation of year-class strength;

- d) consider a synthesis of recruitment issues presented at the SAP symposium;
- e) evaluate an analysis of simulations exploring the effects of stock structural factors on the parameters of stock-recruitment relationships with a view to preparing a case for a Study Group on evaluating the impact of these factors on stock projections;
- f) consider a synthesis of the 2000 Theme Session on "Spatial and Temporal Patterns in Recruitment Processes" to be prepared by the Session's Conveners.

WGRP will report by 1 August 2001 for the attention of the Oceanography and Living Resources Committees.

2C10 The **Study Group on an ICES/IOC Checklist of Phytoplankton** [SGPHYT] will be renamed the **Study Group on an ICES/IOC Microplankton Protist List** [SGPHYT](Chair: L. Edler, Sweden) and will work by correspondence in 2001 to:

- a) compile a complete relational database of Microplankton and Protists, on the basis of the regional checklists;
- b) check that the species meet the criteria to be included in the Database;
- c) consider the options for publication and distribution of the Database;
- d) prepare for a meeting to evaluate the taxonomy of the species included in the Database.

SGPHYT will report by 1 August 2001 for the attention of the Oceanography Committee and ACME.

2C11 The **ICES/GLOBEC Working Group on Cod and Climate Change** [WGCCC] (Chair: K. Drinkwater, Canada) will work by correspondence in 2001 to:

- a) review and evaluate the outcome of the Workshop on the Dynamics of Cod Growth and determine follow-up activities;
- b) make plans for a proposed workshop on "The transport of cod across stock boundaries during early life" in 2002;
- c) plan and initiate the synthesis of work to date on Cod and Climate Change by:
 - i) seeking funds for the preparation of a book on cod and climate change and if successful, holding a meeting of a small steering group to develop an outline for the book as well as plan the necessary activities and determine the people required to write and publish the book;
 - ii) assembling references and additional data on cod stocks throughout the North Atlantic with the purpose of making the information available through publication and on a CD;
 - iii) examining possible ways by which environmental information can be incorporated into the assessment process;
- d) further develop plans for the ICES Symposium on Climate Variability and Fisheries;
- e) consult with other relevant Groups on possible joint activities and data requirements.

WGCCC will report by 1 August 2001 for the attention of the Oceanography Committee and ACME.

RESOURCE MANAGEMENT COMMITTEE (D)

2D01 A **Workshop on FLEKSIBEST – an age-and length-based assessment tool** [WKFLEK] (Chair: K. Guldbrandsen Frøysa, Norway) will be held in Bergen, Norway from 16–19 January 2001 to:

- a) define a protocol and a workplan for testing the FLEKSIBEST model based on a review of the model and the results of runs made during and after the AFWG meeting in 2000. These results allow comparison of method performance;
- b) enable participants through hand-on exploration of FLEKSIBEST to contribute to the test and further development of the method;

- c) discuss the interpretation of results from FLEKSIBEST.

WKFLEK will report by 26 January 2001 for the attention of the Resource Management Committee and ACFM.

2D02 The **Planning Group on Redfish Stocks** [PGRS] (Chair: T. Sigurdsson, Iceland) will meet in Bergen 5–6 February 2001 to:

- a) plan the international trawl/acoustic survey of redfish to be carried out in the Irminger Sea and adjacent waters in June/July 2001;
- b) prepare work by correspondence during summer/autumn 2001 to report on the outcome of the surveys;

- c) consider the required frequency of the surveys as input to assessments.

PGRS will report by 20 February 2001 for the attention of the Resource Management Committee and ACFM.

2D03 The **International Bottom Trawl Survey Working Group** [IBTSWG] (Chair: A.W. Newton, UK) will meet in Dublin, Ireland from 2–5 April 2001 to:

- a) review and comment upon specifications for extending the ICES IBTS database. This expansion shall include data from the beam trawl survey in the North Sea and bottom trawl surveys in western and southern divisions. This database shall continue to be held at the ICES Secretariat;
- b) agree on procedures on how to validate the integrity of the data in the IBTS database;
- c) define the necessary steps to develop a new standard gear for the IBTS surveys in the western divisions;
- d) evaluate comparative fishing trials during the IBTS in the western Division between France, Ireland, and Scotland;
- e) encourage further exchange of valid tow positions between all participating institutes;
- f) consider the implications of the conclusions of the 2000 Theme Session K on “Incorporation of External Factors in Marine Resource Surveys”;
- g) evaluate the new standard indices and the implications in using the new indices in assessments in collaboration with relevant assessment working groups;
- h) examine the gear parameters extracted by ICES from the IBTS database and analyse net performance;
- i) examine, in conjunction with members of the WGOH and SGOOS, those aspects of the IBTS which may form an ICES contribution to GOOS and what changes might be necessary to conform to the requirements of GOOS;
- j) review the coordination of surveys in the three divisions including development of survey manuals.

WGIBTS will report by 19 April 2001 for the attention of the Resource Management and Living Resources Committees and ACFM and ACME.

2D04 The **Working Group on Fishery Systems** [WGFS] (Co-Chairs: P. Degnbol, Denmark and J. Sutinen, USA) will meet at ICES Headquarters from 12–15 June 2001 to:

- a) review the progress in implementation of case studies (North Sea demersal fisheries and New England Scotian Shelf fisheries) and adapt work plan for these case studies;
- b) specify and refine methods to be used in case studies;
- c) develop criteria for performance evaluations of fisheries management based on literature reviews.

WGFS will report by 29 June 2001 for the attention of the Resource Management Committee and ACFM.

2D05 The **Planning Group on Surveys on Pelagic Fish in the Norwegian Sea** [PGSPFN] (Chair: J.C. Holst, Norway) will meet in Reykjavik, Iceland from 15–17 August 2001 to:

- a) describe the migration pattern of the Norwegian spring-spawning herring stock in 2001;
- b) consider major hydrographic and zooplanktonic developments since last year. Consider the significance of these developments to the herring stock;
- c) evaluate the survey transects carried out in 2001 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 2002;
- e) plan an international coordinated survey on Norwegian spring-spawning herring in May–June 2002;
- f) follow-up the ongoing publishing process of the Group.

PGSPFN will make its report available to WGNPBW and will report by 31 August 2001 for the attention of the Resource Management Committee and ACFM and ACME.

2D06 The **Working Group on Methods on Fish Stock Assessments** [WGMG] (Chair:) will be established and will meet at ICCAT Headquarters from 15–20 June 2001 to:

- a) develop diagnostics and testing procedures for the evaluation of methods used for producing stock assessments, short-term forecasts, and medium-term projections;
- b) apply such testing procedures to the methods routinely used by ICES at present. Such testing should pay particular attention to:
 - i) bias detection and correction;
 - ii) the form of error distributions in stock-recruit relationships taking into account input from SGPRISM;

- iii) other concerns that may be raised by ACFM from time to time based on input from assessment working groups;
- c) identify strengths and weaknesses in the methods and propose modifications to assessment models or new models as appropriate;
- d) use its diagnostic and testing procedures in order to evaluate the performance of new methodological proposals;
- e) present its results in a form that can be readily implemented in the assessments, e.g. through the development of computer software.

WGMG will report for the attention of the Resource Management and Living Resources Committees and ACFM.

2D07 **A Steering Group on Courses in Fish Stock Assessment Techniques** [SGCFAT]:

(Members: R. Stephenson, Canada, Chair/Vice-Chair of ACFM, and Chairs of Resource Management and Living Resources Committees) will be established and will work by correspondence in 2001 to:

- a) identify lecturers and other resource persons to lead the first of four courses on Fish Stock Assessment Techniques;
- b) contact donors to clarify the possibilities for financial support to such an enterprise;
- c) investigate possibilities for collaboration with relevant organisations such as NATO (advanced studies) and NAFO;
- d) establish the course to be held in the autumn of 2001.

SGCFAT will report by 30 April 2001 for the attention of the Resource Management and Living Resources Committees and ACFM.

MARINE HABITAT COMMITTEE (E)

2E01 **A Steering Group for a Sea-Going Workshop on Pelagic Biological Effects Methods** [SGSEA] (Chair: K. Hylland, Norway) will be established and will meet at ICES Headquarters from 18–19 January 2001 to:

- a) prepare and organise a sea-going workshop to be conducted via a series of cruises on contaminant gradients in the German Bight and the Norwegian sector of the northern North Sea.

SGSEA will report by 31 January 2001 for the attention of the Marine Habitat Committee and ACME.

2E02 **The Marine Chemistry Working Group** [MCWG] (Chair: R. Law, UK) will meet in Mont-Joli, Quebec, Canada, from 26 February to 2 March 2001 to:

A. Chemical Oceanography Subgroup

- a) review and report oxygen determinations in sea water by the Winkler titration and membrane electrodes;
- b) review a report from a multiship experiment of sampling and determination of chemical variables in sea water;
- c) review and report on progress in the modelling of marine biogeochemical processes;
- d) review and report on progress in the studies of estuarine behaviour of nutrients;
- e) review and report on the present knowledge about total nitrogen, total phosphorus, and total organic carbon in sea

water, their speciation, and arguments for their use in monitoring programmes.

B. Organics Subgroup

- a) critically evaluate the lists of priority contaminants prepared in relevant regional and international organisations and report the outcome;
- b) review new information* on *tris*(4-chlorophenyl)methanol (TCPM) and *tris*(4-chlorophenyl)methane (TCPMe) in fish, including the results of the TCPM and TCPMe interlaboratory study, second phase and report the outcome;
- c) review new information on the analysis of PAH metabolites in bile, critically review the robustness of the methods, and report the outcome;
- d) review new information on the use of membrane systems for sampling and report the outcome;
- e) review new information on the monitoring and analysis of toxaphene and report the outcome;
- f) review new information* concerning oil spills, their effects and associated protocols for incident response and report the outcome;
- g) review recent data* on dioxins, furans, and dioxin-like PCBs in fish, with particular reference to Baltic fish, and report the outcome (initially to WGBEC);

- h) review new information* concerning polybrominated diphenylethers (PBDEs) and report the outcome;
- i) review new information* concerning new contaminants in the marine environment (new booster pesticides and chlorinated and/or brominated PAHs) and report the outcome;
- j) as a follow up to work conducted in 2000 on volatile organic contaminants, provide an evaluation of the significance* of these compounds in the marine environment;
- k) prepare material that can be used by WGSAM relevant to the development of models for the relationship between the concentration of a contaminant in an organism and the ambient concentration.

* = submit results of discussion to WGBEC

C. Trace Metals Subgroup

- a) critically evaluate the lists of priority contaminants prepared in relevant regional and international organisations and report the outcome;
 - b) review information on estuarine transport of trace metals, relevant measurement techniques available, and the comparability of their results, and report the outcome;
 - c) review new information on the use of membrane systems for sampling and report the outcome;
 - d) review new information concerning the supplementary work to the Icelandic cod study on the relationship between trace element concentrations in cod liver and various co-factors and report the outcome;
 - e) prepare material that can be used by WGSAM relevant to the development of models for the relationship between the concentration of a contaminant in an organism and the ambient concentration.
- d) in association with SGQAC, prepare guidelines containing criteria for data screening and evaluation prior to assessment of chemical monitoring data [HELCOM 2001/2];
 - e) review any new SGQAC Annexes on Quality Assurance and report the outcome [HELCOM 2001/1];
 - f) review contaminants in the ICES contaminants database to:
 - i) establish and define new classifications for compound identification to clarify types of compounds based on isomers, size, and active sites, and preliminary identification when CAS numbers are not available;
 - ii) set criteria for acceptability for inclusion in the database (e.g., need for isomer specifications);
 - iii) review currently used ranges of detection and contamination;
 - g) establish a network of contacts for the ICES data manager with an expert for each current chemical group;
 - h) discuss matters referred to from the three subgroups, as necessary.

MCWG will report by 30 March 2001 for the attention of the Marine Habitat and Oceanography Committees and ACME.

2E03 **The Working Group on Marine Sediments in Relation to Pollution** [WGMS] (Chair: S. Rowlett, UK) will meet in Lisbon, Portugal from 5–9 March 2001 to:

D. Plenum

- a) review the updated list of relevant certified reference materials for organic compounds for use in marine monitoring including also trace metals and nutrient compounds, and in this connection consider the mechanism for the review and updating of these tables;
 - b) review how a presentation of the long-term performance of a laboratory can be standardized taking the information from the 2000 MCWG meeting into account and report the outcome;
 - c) review which QA data should be submitted to the database together with environmental
- c) consider information on the dynamics of the environment, such as permanent sedimentation, highly dynamic environments, bioturbation, interactions of contaminants between water and sediment and over larger areas, and their significance to biological effects;
 - d) review the methods to define sediment quality criteria, taking account of experience in the Netherlands, USA, Canada, and Australia (in order to initiate cooperation between WGMS and WGBEC, the Chairs will communicate intersessionally, and the review will be made available to WGBEC before their meeting);

- e) recommend a methodology that provides the basis for spatial and temporal monitoring of sediment quality, particularly taking statistical aspects into consideration (this should include intersessional discussions with statisticians).

WGMS will report by 30 March 2001 for the attention of the Marine Habitat Committee and ACME.

2E04 **The Working Group on Biological Effects of Contaminants** [WGBEC] (Chair: K. Hylland, Norway) will meet in Warnemünde, Germany from 26–30 March 2001 to:

- a) consider detailed plans and data sets for a workshop to evaluate the suitability of artificial intelligence (AI) methods for assessing complex fish monitoring data sets;
- b) evaluate lessons to be learned from the biological and chemical monitoring of the “Erika” oil spill off Brittany;
- c) review progress with the Sea-Going Workshop on Pelagic Biological Effects Methods;
- d) develop detailed guidance for procedures required to test and validate new biological effects monitoring methods (including statistical considerations);
- e) in collaboration with WGAGFM, consider the applicability for marine monitoring of new biological effects techniques in the fields of molecular biology, endocrine disruption, genomics, and proteomics;
- f) consider progress in understanding the causes and effects of endocrine disruption in the marine environment;
- g) consider issues arising from the Theme Session on “Temporal and spatial trends in the distribution of contaminants and their biological effects in the ICES area”;
- h) evaluate the implications for marine monitoring of pilot surveys of cytochrome P450 induction in juvenile dab in the length range 5–9 cm, and in juveniles of other species;
- i) review progress with publication and electronic dissemination of biological effects techniques in the ICES TIMES series;
- j) review progress with the BEQUALM programme;
- k) consider the implications for marine biological effects monitoring of the EU Water Framework Directive and its annexes;
- l) from the point of view of marine risk assessment of chemicals and wastes, consider information on the relative sensitivity of freshwater and marine

organisms to contaminants, and how differing environmental conditions affect their responses to pollution;

- m) review the material provided by WGMS (after their meeting earlier in March) on methods to define sediment quality criteria, taking account of experience in the Netherlands, USA, Canada, and Australia;

- n) review and amend the priority lists of contaminants and other chemical hazard assessments communicated from MCWG after their meeting.

WGBEC will report by 17 April 2001 for the attention of the Marine Habitat Committee and the ACME.

2E05 **The Study Group on Ecosystem Assessment and Monitoring** [SGEAM] (Chair: L. Føyn, Norway) will meet at ICES Headquarters from 30 April to 3 May 2001 to:

- a) continue, and complete, the review of the extent to which holistic environmental assessments (e.g., OSPAR QSR 2000, HELCOM Fourth Periodic Assessment) are supported by results from monitoring programmes;
- b) review the environmental assessments conducted by OSPAR, HELCOM, and EEA;
- c) contribute to the further development and implementation of Ecological Quality Objectives in general, and in particular for marine mammals and seabirds [OSPAR 2001/2.2 and 2.3].

SGEAM will report by the designated deadline for the attention of the Marine Habitat Committee and the Advisory Committees to be decided by MCAP.

2E06 **The Working Group on Statistical Aspects of Environmental Monitoring** [WGSAEM] (Chair: S. Uhlig, Germany) will meet in Oslo, Norway from 2–6 April 2001 to:

- a) consider means of including temporal data with various degrees of quality in a temporal trend assessment [OSPAR 2001/2.1];
- b) comment on methods to analyse the ICES biological community database and provide an evaluation of these methods;
- c) evaluate material concerning techniques for dynamic sampling in monitoring programmes;
- d) review statistical methods for the analysis of data on contaminants in sediments;
- e) in relation to monitoring programmes for the input of contaminants, investigate and report on methods for the analysis of quarterly data;

- f) continue the investigation of trend detection methods for the analysis of monthly data on inputs of contaminants to the marine environment;
- g) consider statistical designs in relation to sampling to control the risk of failing to detect hot spots of contamination;
- h) continue to conduct work on spatial sampling design (e.g., to assess the mean level in an area), utilising case studies as a basis.

WGSAEM will report by 17 April 2001 for the attention of the Marine Habitat Committee and ACME.

2E07 **The Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem** [WGEXT] (Chair: J. Side, UK) will meet in Copenhagen, Denmark from 3–6 April 2001 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, and review scientific programmes and research projects relevant to the assessment of environmental effects of the extraction of marine;
- b) review the production of national reports and consider the development of a more standardised format so that a full picture of the total amounts extracted in each Member Country can be obtained; consider also whether a means of storing this information electronically is needed;
- c) continue work (taking into account relevant work under and requirements of OSPAR and HELCOM) on the updating of:
 - i) the ICES Code of Practice for the Commercial Extraction of Marine Sediments (including minerals and aggregates), produced in 1992,
 - ii) guidelines for the preparation of an Environmental Impact Assessment evaluating the effects of seabed aggregate extraction on the marine environment, including as appropriate guidelines on monitoring and standardised procedures, reviewed most recently in 1998 for inclusion in the forthcoming *ICES Cooperative Research Report*. In taking forward the production of draft ICES guidelines, WGEXT will review draft guidelines tabled at the last meeting by the UK, Denmark and, once available, Belgium (to be circulated), HELCOM work and other guidelines being developed by other ICES Members

Countries. WGEXT will endeavour to produce a draft set of revised ICES guidelines at this meeting;

- d) commence work on developing criteria for the selection, design, and operation of a series of test ranges in offshore areas in order to:
 - i) assess the capability of Acoustic Ground Discrimination Systems (AGDS) for detecting and delineating biological communities,
 - ii) compare and contrast the relative resolution and capability of AGDS with conventional side-scan sonar, multi-beam and high resolution seismic reflection methods,
 - iii) determine the relative resolution and operational parameters of AGDS and conventional mapping systems in a variety of water depths and substrate types, primarily focusing on habitats relevant to aggregate extraction activity,
 - iv) determine the need for testing/intercalibration ranges in ICES Member Countries taking into account the role of the manufacturers in testing their equipment;
- e) examine the methods that might be used to assess localised impacts from aggregate extraction on fisheries, and the means to adequately protect known herring spawning beds in the vicinity of extraction operations;
- f) undertake a review of reference site data sets used in the monitoring of, and in research on, the effects of aggregate extraction in order to establish their usefulness in determining the degree of natural variability in biotopes;
- g) review conclusions drawn from the completion of biological monitoring of the Øresund fixed link with a view to applying this knowledge to other large-scale extraction projects;
- h) contribute to the verification of the EUNIS classification, together with SGMHM and BEWG;
- i) review the outcome of the Workshop on Deep-Seabed Survey Technologies.

WGEXT will report by 20 April 2001 for the attention of the Marine Habitat and Resource Management Committees and ACME.

2E08 **The Study Group on Marine Habitat Mapping** [SGMHM] will be re-established as the **Working Group on Marine Habitat Mapping** [WGMHM] (Chair: E. Jagtman, Netherlands) and will meet in Galway, Ireland from 3–6 April 2001 to:

- a) review the results of the Second OSPAR/ICES/EEA Workshop on Habitat Classification and Biogeographic Regions (Southampton), the Second Aquatic Restoration and Conservation (ARC) Workshop on Habitat Classification, the Theme Session on Classification and Mapping of Marine Habitats, for consideration in the WGMHM Workplan, and will prepare material for a discussion on the various classification systems, their advantages and disadvantages, to be dealt with by ACME;
- b) report on progress made in the joint WGMHM/WGEXT/BEWG plans on habitat mapping projects (habitat map of the North Sea, Wadden Sea, deep-sea map, OSPAR area map to level 3 of the EUNIS classification system);
- c) review the outcome of the ICES Workshop on Deep-Water Survey Technologies and the development of standards for marine habitat mapping and initiate the preparation of guidelines for habitat mapping and data handling;
- d) collate comments to the EUNIS classification system, including comments from BEWG, WGECO, and WGEXT, to be handed over to the EEA after review by ACME;
- e) prepare a strategy plan for how to deal with pelagic habitats, taking into account the outcome of the Southampton workshop;
- f) prepare a proposal for the development of a GIS database for habitats, with cost estimates included and potential sources of data to be submitted.

WGMHM will report by 20 April 2001 for the attention of the Marine Habitat Committee and ACME.

2E09 The **Benthos Ecology Working Group** [BEWG] (Chair: K. Essink, Netherlands) will meet in Wimereux, France, from 17–20 April 2001 to:

- a) finalise guidance to ACME on quality assurance (QA) procedures for benthos studies [OSPAR 2001/1.1];
- b) report on progress in the integration of national benthos surveys in the North Sea in relation to the ICES North Sea Benthos Survey;
- c) review the impact on the marine benthic system in the ICES area from:
 - i) the dumping of fish offal and fish discards,
 - ii) the dumping of invertebrate discards,
 - iii) the damage in the trawl path due to bottom trawling gear;
- d) produce guidelines for epibenthos sampling and community description for publication in the ICES TIMES series;
- e) provide guidance to habitat mapping and habitat description of benthic communities, and in this connection, contribute to the verification of the EUNIS classification together with WGMHM and WGEXT.

BEWG will report by 4 May 2001 for the attention of the Marine Habitat and Oceanography Committees and ACME.

MARICULTURE COMMITTEE (F)

2F01 The **Working Group on Environmental Interactions of Mariculture** [WGEIM] (Chair: I. M. Davies, UK) will meet in Tenerife, Spain from 12–16 March 2001 to:

- a) collate and review information on production patterns based on reports prepared by Working Group members and, in this connection, collect and assess information on the methodology for the collection of statistics on production and feed utilisation for finfish culture with a view to harmonising methods;
- b) review information on technological changes in mariculture, including the utilisation of new species, with particular emphasis on the consequences for production and the environment;

- c) review new research and monitoring programmes, in particular:
 - i) the full proceedings of the 1999 ICES Symposium on “Environmental Effects of Mariculture”;
 - ii) the French report on Artificial Reefs—State of the Art and Required Research, being prepared under Denis Lacroix of IFREMER, with particular reference to their aquaculture potential;
 - iii) preliminary proceedings from the ICES co-sponsored “Seventh International Conference on Artificial Reefs and Related Aquatic Habitats” (7–11 October 1999, Liguria, Italy);

- d) review monitoring activities and develop guidelines for the preparation of Environmental Impact Statement/Assessment documents for large-scale shellfish farm developments, and appropriate monitoring programmes;
- e) review issues of sustainability in mariculture, including interactions between mariculture and other users of resources in the coastal zone and, in particular:
 - i) review, edit, and approve a draft Technical Report on the use of chemicals in mariculture,
 - ii) collate contributions and continue the preparation of a report with the working title of "Towards sustainability in mariculture in the ICES area" for completion of the full draft report for the WGEIM 2002 meeting,
 - iii) collate and review information on the quantities of medicinal chemicals used in fish and shellfish farming, with a view to assessing their environmental impacts,
 - iv) compile an account of intra- and inter-specific interactions between wild and cultured molluscan stocks,
 - v) review and comment on a report from WGSE on the interactions of seabirds and mariculture.

WGEIM will report by 6 April 2001 for the attention of the Mariculture Committee and ACME.

2F02 **The Working Group on Pathology and Diseases of Marine Organisms [WGPDMO]** (Chair: S. Møllgaard, Denmark) will meet in Santiago de Compostela, Spain, from 13–17 March 2001 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;
- c) evaluate and report on the confirmation of the agent of *Crassostrea angulata* gill disease and its infectivity to *Crassostrea gigas* and other oyster species;
- d) report on the progress of further investigations on the role of paramoebae and other factors in the mass mortality of lobsters on Long Island;
- e) review and prepare a progress report on the developments and intersessional analysis of ICES fish disease and related data banks and a draft manuscript for submission to the *ICES TIMES* series on the statistical

methods developed for the analysis of the data in the ICES data banks in relation to fish diseases (authors: W. Wosniok *et al.*);

- f) review and assess an intersessionally prepared report on the compilation of existing data on spatial and temporal trends in the occurrence of selected parasites of wild fish and on potential environmental factors of relevance for the explanation of observed variance;
- g) review progress reports from the BEQUALM Work Package "External Fish Diseases and Liver Histopathology" and from the EU project on nodaviruses and other relevant information to provide advice on effective control measures;
- h) maintain an overview of the spread of *Ichthyophonus* in herring stocks and the distribution and possible cause(s) of the M74 syndrome;
- i) report and assess the effectiveness of salmon farming management control methods for the control of sea lice in ICES Member Countries;
- j) review an intersessionally prepared draft manuscript for publication in the *ICES Cooperative Research Report* series on important trends in disease problems in finfish and shellfish culture in the ICES area during the last five years;
- k) evaluate progress in the intersessional development of maps of marine fish and shellfish diseases as a contribution to the ICES Environmental Status Report.

WGPDMO will report by 6 April 2001 for the attention of the Mariculture Committee and ACME.

2F03 **The Working Group on the Application of Genetics in Fisheries and Mariculture [WGAGFM]** (Chair: M. Møller Hansen, Denmark) will meet in Bergen, Norway from 26–28 March 2001 to:

- a) continue to review and report on general population genetics topics in fisheries and mariculture and identify scopes for enhanced international cooperation;
- b) review and report on new developments in the identification of genes of relevance to aquaculture and studies of wild populations;
- c) review and report on the importance of different kinds of genetic population structures in relation to human impact;
- d) review and report on methods for estimating effective population sizes and/or changes in effective population sizes in anadromous and marine fish populations;

- e) review and report on examples where population genetics research has provided important information for the management of marine fish populations.

WGAGFM will report by 20 April 2001 for the attention of the Mariculture Committee, ACME, and ACFM.

2F04 The **Working Group on Marine Fish Culture** [WGMAFC] (Chair: J. Castell, Canada) will work by correspondence in 2001 to:

- a) report on the current status of marine fish cultivation in Member Countries and on the factors that are likely to constrain further development of the industry;
- b) graph and evaluate current and historical trends for major species;
- c) initiate collaboration with WGEIM on the review of technological developments in relation to fish production and their application to various species;
- d) report on alternative sources of protein and lipid, including references to electronically available bibliographies;

- e) prepare an inventory on the use of the ICES standard reference diets, and the use of microdiets among laboratories and their use with different fish species;

- f) support research programmes on fish health and report on existing and emerging diseases of cultured marine fish, including treatments used;

- g) compile a comprehensive list of procedures and methods for monitoring of feeding regimes;

- h) review fish welfare in relation to marine fish culture to initiate a process to establish a set of welfare guidelines or indicators as to the state of the health and well-being of the fish;

- i) refer to the work of WGAGFM in developing standard culture conditions under which strains, stocks, or species might be tested to evaluate their performance.

WGMAFC will report by 31 May 2001 for the attention of the Mariculture Committee.

LIVING RESOURCES COMMITTEE (G)

2G01 The **Planning Group for Herring Surveys** [PGHERS] (Chair: P.G. Fernandes, UK) will meet in IJmuiden, The Netherlands, from 11–15 December 2000 to:

- a) coordinate the timing, area allocation, and methodologies for acoustic and larval survey for herring in the North Sea, Divisions VIa and IIIa, and Western Baltic;
- b) combine the survey data to provide estimates of abundance for the population within the area;
- c) take into account the findings of WGFASST and examine aspects of the depth dependence of target strength for herring, specifically;
 - i) review the available literature on the depth dependence of target strength in herring;
 - ii) report on investigations on the depth distribution of herring schools around Shetland for the years 1991–1997;
 - iii) determine methods to evaluate the depth distribution of herring in past surveys for the whole of the North Sea.

PGHERS will make its report available to HAWG and will report by 8 January 2001 for the attention of the Living Resources and Resource Management Committees.

2G02 A **Planning Group on Comparing the Structure of Marine Ecosystems in the ICES Area** [PGECML] (Chair: J.G. Pope, Norway) will be established and meet at ICES Headquarters from 26–29 June 2001 to:

- a) develop a workplan for the quantitative comparative of ecosystems by compiling a quantitative comparison of the species and biomass composition of the higher trophic levels in the north-east Atlantic, e.g. Irminger Sea, Barents Sea, the Baltic Sea, the North Sea, Irish Sea, the seas off Iberia, and the north-western European shelf edge;
- b) identify a timetable for this workplan, in conjunction with the FAO FIGIS project;
- c) evaluate what would be required to make a comparable estimate from historical data available in the 1900s, in order to estimate how these ecosystems have changed;
- d) in accordance with C.Res.1999/3G02, establish the workplan as an ICES contribution to the North Atlantic component of the Census of Marine Life programme;

PGECML will report by 28 February 2001 for the attention of the Living Marine Resources and Consultative Committees, and to ACFM.

The General Secretary will enter into an arrangement with the Sloan Foundation to

secure funding for a group of core participants to take part in the meeting.

2G03 The **Study Group on the Biology and Life History of Crabs** [SGCRAB] (Chair: R. Dufour, Canada) will meet in ICES from 25–29 March 2001 to:

- a) update information on the stock structure, recruitment, life history parameters and effect of environmental factors on crab stocks;
- b) compare assessments of the main European and American stocks of crabs (edible crab, spider crab, snow crab, king crab) and if possible the following other crab stocks (Scotian shelf rock and Jonah crab, American blue crab, Spain velvet swimming crab *Necora puber*);
- c) review and disseminate information on progress on the development of assessment methodologies and survey tools for crabs, using appropriate examples;
- d) evaluate the results of national programs to monitor the effects of habitat disturbance on crab populations, and identify what research is needed to develop more effective monitoring programmes;
- e) assess the potential of Marine Protected Areas for the conservation of crab stocks;
- f) review the impact of parasites and diseases on the principal crab stocks.

SGCRAB will report by 17 April 2001 for the attention of the Living Resources and Marine Habitat Committees.

2G04 The **Working Group on Cephalopod Fisheries and Life History** [WGCEPH] (Chair: G. Pierce, UK) will meet in Faro, Portugal from 28–30 March 2001 to:

- a) update currently available landing statistics and information on fishing effort and discards; 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 population size of fished cephalopods;
- c) compile available data on gear selectivity for cephalopods;
- d) identify possible precautionary approaches to the management of cephalopod resources;
- e) review the results of national and transnational projects collecting data on fished cephalopods, especially those projects studying relationships between abundance and environmental conditions, factors affecting recruitment, migration and

distribution patterns of juveniles and adults, and trophic interactions;

- f) review research priorities in relation to data requirements for fishery assessment and management, and identify how these could be undertaken;
- g) update the bibliographic database of cephalopod literature relevant to fisheries, including grey literature;
- h) identify the future programme of the Cephalopod Working Group.

WGCEPH will report by 17 April 2001 for the attention of the Living Resources Committee, and ACFM and ACME.

2G05 The **Working Group on Beam Trawl Surveys** [WGBEAM] (Chair: G. Piet, Netherlands) will meet for 4 days in April 2001 in IJmuiden, Netherlands to:

- a) discuss which beam trawl surveys could be incorporated in the international database of beam trawl survey data and to what extent standardisation and compatibility can be improved;
- b) evaluate the current method for calculating abundance indices by age-group for sole and plaice in the North Sea (Division VIIa and Divisions VIIId-g) and discuss how this can be improved;
- c) discuss which summary results of the surveys chosen in b) should be included in the report;
- d) collate information describing epibenthic invertebrate by-catch during beam trawl surveys;
- e) prepare a progress report summarising the results of the 2000 beam trawl surveys;
- f) coordinate their activities with those of IBTS, in particular on the expansion of the ICES IBTS data base.

WGBEAM will report by 10 May 2001 for the attention of the Living Resources and Marine Habitat Committees, and ACFM.

2G06 The **Study Group on Elasmobranch Fishes** [SGEF] (Chair: P. Walker, Netherlands) will work by correspondence in 2001 to:

- a) report on the development and progress in the study and assessment of elasmobranch fisheries and stocks;
- b) initiate further studies towards assessment of elasmobranch fisheries and stocks;
- c) exchange information on pelagic sharks with ICCAT through making Council funds available to allow the Working Group Chair to participate in the ICCAT shark meeting in November 2000;

- d) pursue the NAFO initiative to organise a Symposium in 2002;
- e) plan a joint ICCAT/ICES workshop on assessment of pelagic sharks in the North Atlantic in June-July 2002;
- f) plan an assessment meeting in May 2002, in conjunction with the EU-funded project DELASS.

SGEF will report by 31 May 2001 for the attention of the Living Resources Committee and ACFM.

2G07 **The Working Group on Mackerel and Horse Mackerel Egg Surveys** [WGMEGS] (Chair: C. Hammer, Germany) will work by correspondence in 2001 to:

- a) coordinate the individual cruises of the 2001 Mackerel and Horse Mackerel Egg surveys (January-July);
- b) coordinate the distribution of plankton and ovary samples between the laboratories;
- c) coordinate the collection of the survey data for the databases of the data coordinators;
- d) prepare for a meeting in 2002 to analyse the data and report on the survey results.

WGMEGS will make its report available to WGMHSA and will report by 31 May 2001 for the attention of the Living Resources and Resource Management Committees.

2G08 **The Stock Identification Methods Working Group** [SIMWG] (Co-Chairs: K.D. Friedland, J. Waldman, and S. Cadrin, USA) will work by correspondence in 2001 to:

- a) continue development of the 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 2001 for the attention of the Living Resources Committee.

2G09 **The Working Group on Crangon Fisheries and Life History** [WGCRAN] (Chair: A. Temming, Germany) will work by correspondence in 2001 to:

- a) design a Y/R model capable of predicting yield of the shrimp fishery under different

management scenarios (e.g. varying effort level and seasonality);

- b) identify the necessary steps in data preparation for the model input;
- c) coordinate and initiate research on *C. crangon* biology, stock situation, and by-catch in shrimp fishery;
- d) plan for a meeting in 2002 in Ostende, Belgium to:
 - i) collate new assessment and by-catch data;
 - ii) apply the *crangon* Y/R model with different effort scenarios;
 - iii) investigate further the causes of variability in shrimp stocks;
 - iv) co-ordinate and initiate research on *C. crangon* biology, stock situation and by-catch in shrimp fishery;
 - v) investigate ways to link discard predictions to the Y/R predictions.

WGCRAN will report by 31 May 2001 for the attention of the Living Resources and the Fisheries Technology Committees, and ACFM.

2G10 **A Study Group on the Estimation of Spawning Stock Biomass of Sardine and Anchovy** [SGSBSA] (Chair: Y. Stratoudakis, Portugal) will be established and will meet in Lisbon, Portugal from 22–25 October 2001 to:

- a) design the sardine and anchovy DEPM surveys for spring 2002;
- b) standardise all methodologies within DEPM, with particular attention on the estimation of spawning fraction;
- c) decide the most appropriate adult sampling design in cases of anticipated large regional differences in abundance and fish reproductive properties;
- d) analyse the feasibility of using the continuous underway fish egg sampler (CUFES) to improve DEPM estimates.

SGSBSA will report by 8 November 2001 for the attention of the Living Resource Committee.

BALTIC COMMITTEE (H)

2H01 **The Baltic International Fish Survey Working Group** [WGBIFS] (Chair: E. Aro, Finland) will meet in Kaliningrad, Russia from 5–9 February 2001 to:

- a) combine and analyse the results of the 2000 acoustic surveys and report to WGBFAS;
- b) correct errors in and update the hydroacoustic database BAD1 for the years 1991 to 2000;

- c) plan and decide on acoustic surveys and experiments to be conducted in 2001 and 2002,
- d) update, if necessary, both the Baltic International Trawl Survey (BITS) and Baltic International Acoustic Survey (BIAS) manuals;
- e) continue the comparison and analysis of results from concurrent survey activities by the traditional and the new standard trawls;
- f) consider and analyse conversion factors between new and old trawls, on a national level, and develop methods to estimate the proper conversion factors;
- g) continue the evaluation of the survey design strategies for future BITS surveys;
- h) continue to establish the acoustic database BAD2;
- i) take note of the report of the Study Group on Herring Assessment Units in the Baltic Sea.

WGBIFS will report by 18 February 2001 for the attention of the Baltic and Resource Management Committees.

2H02 **A Study Group on GEOHAB Implementation in the Baltic** [SGGIB] (Chair: K. Kononen, Finland) will be established and will meet in Dublin, Ireland from 12–13 March 2001 to:

- a) create a plan for the implementation of GEOHAB in the Baltic Sea;
- b) plan coordinated multi-ship field experiments in support of GEOHAB in the Baltic Sea.

SCOR and IOC will be invited to co-sponsor the Study Group.

SGGIB will report by 2 April 2001 for the attention of the Baltic and Oceanography Committees and ACME.

2H03 **The Study Group on Multispecies Predictions in the Baltic** [SGMPB] (Chair: E. Aro, Finland) will meet in Charlottenlund, Denmark from 7–11 May 2001 to:

- a) undertake the tasks as specified in C.Res. 1999/2H05, i.e.:
 - i) explore, in more detail, available and presently formulated medium- to long-term multispecies prediction methodology, including a thorough testing of the 4M software package in this respect;
 - ii) develop, apply, and validate different types of multispecies prediction models with sufficient, but not over-emphasised complexity, considering environmental processes affecting prey selection and

total food intake, growth, maturation, and egg production, as well as subsequent recruitment success;

- iii) evaluate the stability and suitability of biological reference points considering multispecies interactions, environmental processes and their spatial heterogeneity;
- iv) explore the feasibility of introducing statistically-based spatial multispecies frameworks in the Baltic, allowing modelling of migration rates in comparison to observations from tagging experiments.

SGMPB will report by 11 June 2001 for the attention of the Baltic Committee.

2H04 **The Study Group of Baltic Cod Age-Reading** [SGBCAR] (Chair: Y. Walther, Sweden) will work by correspondence in 2001 to:

- a) continue the revision and adoption of the draft age-reading manual on Baltic Cod Age-Reading, taking new information into account;
- b) report on progress of the Manual for Baltic Cod Age-Reading;
- c) consider ways to delineate the differences between "age-reading schools".

SGBCAR will report by 1 August 2001 for the attention of the Baltic Committee.

2H05 **The Study Group on Salmon Scale-Reading Problems** [SGSSR] (Chair: E. Ikonen, Finland) will meet in Helsinki, Finland from 12–14 November 2001 to:

- a) review and discuss the progress in Baltic salmon scale interpretation;
- b) review the results from the Workshop on Usefulness of Scale Growth Analyses and Other Measures of Condition in Salmon (WKUS- C.Res.1998/2:60);
- c) select material for the evaluation of accuracy in scale-reading.

SGSSR will report by 10 December 2001 for the attention of the Baltic Committee.

2H06 **A Workshop on the Scientific Basis for Ecosystem Advice in the Baltic** [WKSBEAB] (Co-Chairs: H. Ojaveer, Estonia, K. Myrberg, Finland, and H. Dahlin, Sweden) will be held in Stockholm, Sweden from 30 November–1 December 2001 to:

- a) develop the scientific basis for ecosystem advice in the Baltic.

WKSBEAB will report by 31 December 2001 for the attention of the Baltic Committee.

OTHER RESOLUTIONS REQUIRING ACTION

- 4ACFM The General Secretary will contact NEAFC to get access to their database on catches of deep-water species on the same basis as for mackerel. These data would be of high value to the work of WGDEEP.
- 4ACFM The General Secretary should write to ICES Member Countries to encourage them to make a special effort to collect area-specific catch, landings, effort, and biological data from exploratory and commercial fishing activities in international waters and report it to ICES. This will be very useful information for the assessment of deep-water species. Furthermore, ICES would appreciate any documented information that Member States may have on fishing activity from non-member states in these waters. Such information will also be reported to ICES.
- 4E01 ICES will co-sponsor with IOC a **Sea-Going Workshop on Pelagic Biological Effects Methods** [WKSEA] to be held on several successive cruises during the period February to September 2001 in the North Sea, using vessels from several ICES Member Countries, under the coordination of SGSEA. The aim of the Workshop is to assess the ability of selected methods to detect biological effects of contaminants in pelagic ecosystems under uniform and standardized conditions, and to assess the methods for their applicability in future monitoring programmes. WKSEA will study contaminant gradients in the German Bight and the Norwegian sector of the northern North Sea.
- 4DEL01 A Management Committee for the Advisory Process [MCAP] will be established in accordance with Rule 26, together with three Advisory Committees (Advisory Committee on Fishery Management, Advisory Committee on the Marine Environment, and Advisory Committee on Ecosystems) in accordance with Rule 28, with the following Terms of Reference:
- (i) **MCAP will:**
- (a) manage, with the General Secretary and the Professional Staff, the interactions with Partner Commissions and other clients to clarify and agree the services requested;
 - (b) manage the provision of advice through its Advisory Committees, including ensuring appropriate expert participation, coordination and quality, and tasking Advisory Committees while ensuring that there is no duplication of effort and/or conflicting advice;
 - (c) manage the overall advisory process, consistent with obligations under international protocols, such as the need for fisheries advice to be consistent with precautionary and ecosystem approaches;
 - (d) manage the delivery of advice to Partner Commissions and other clients;
 - (e) manage the wider dissemination of ICES advice and representation of the ICES advisory processes;
 - (f) take account of budgetary constraints in all of the foregoing, particularly when considering the convening of *ad hoc* Advisory Committees;
 - (g) represent the needs and views of the advisory processes on the Consultative Committee and, *ex officio*, on the Bureau;
 - (h) keep under review the needs and options for training so as to facilitate the availability of an appropriate pool of expert analysts and advisers;
 - (j) develop and manage a strategic peer review process so as to inform ICES about any improvements that may be thought necessary, and facilitate an integrated peer review process;
 - (k) oversee such work as is necessary to deliver high quality analysis and advice more cost effectively.
- (ii) MCAP will consist of the Chairs of the three Advisory Committees and the Vice-Chair of ACFM, and *ex officio* the Chair of the Consultative Committee. The Bureau will nominate a separate Chair of MCAP for appointment by the Council for a three-year period.
- (iii) 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).
- (iv) ACFM will have both a Chair and a Vice-Chair. The Vice-Chair shall take responsibility for significant aspects of the

work of the Committee from initiation to delivery of advice.

- (v) 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.
- (vi) ACE will have 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. ACE will be at the forefront of the development of advice on ecosystem management.
- (vii) *Ad hoc* Advisory Committees may be established from time to time with specific tasks and for specified time periods. Such *ad hoc* Advisory Committees will have the responsibility for scientific advice on the special topics for which they were constituted, in accordance with their Terms of Reference. The Chair(s) of *Ad hoc* Advisory Committee(s) will be specified in the resolution establishing the Committee, or by appointment by MCAP for Committees established under MCAP's delegated authority.
- (viii) The Advisory Committees will each consist of a Chair (and, for ACFM, also a Vice-Chair) nominated by the Committee from among Delegates and experts and appointed by the Council, and 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.

- (ix) 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.
- (x) MCAP will not be responsible for the production of the advice, that being the responsibility of the relevant Advisory Committee. None of the Advisory Committees will necessarily be the exclusive source of advice on a specific topic.
- (xi) Strategic peer review of the ICES Advisory Process will be carried out at intervals by experts who are independent of the advisory process, with scientists not normally involved with ICES playing a prominent role. MCAP will develop proposals for the implementation of such strategic peer review for the consideration of the Bureau and the Council.
- (xii) MCAP will also develop plans to enhance and strengthen regular peer reviews of the scientific information that is the basis of advice, and make the peer review process more transparent.

Rules of Procedure 26, 28, and 29 are changed as follows:

Rule 26

- (i) The Management Committee for the Advisory Process (MCAP) shall be responsible for management of all the ICES advisory processes, and for providing strategic direction and leadership for them. It shall also undertake such specific tasks as agreed annually by the Council. MCAP shall have the authority to convene Advisory Committees intersessionally under certain circumstances, including *ad hoc* Advisory Committees to deal with exceptional issues. MCAP shall not be responsible for the production of the advice.
- (ii) The MCAP will be comprised of the Chairs and Vice-Chairs of such Advisory

Committees as may from time to time be established by the Council, and *ex officio* the Chair of the Consultative Committee and the Chairs of such other Committees as the Council may decide. The Bureau will nominate a separate Chair of the MCAP for appointment by the Council for a three-year period.

- (iii) The Chair of MCAP will be responsible for the work of the MCAP, and will report annually to the Bureau and to the Council on the activities and plans of the MCAP and the Advisory Committees. The Chair of MCAP shall have *ex officio* the right to attend all meetings of the Bureau.

Rule 28

1

- (i) The Council shall establish or dissolve as many Committees as it deems necessary in order to formulate, carry out and review a coordinated scientific programme and advisory function on the oceans, marine ecosystems, living resources, and associated human activities. The title and remit for each Committee shall be established by Council Resolution, other than *ad hoc* Committees established intersessionally under Rule 26(i).
- (ii) Such Advisory Committees as may be established by the Council shall be responsible, on behalf of the Council, for providing scientific information and advice to intergovernmental bodies and member Governments. The Advisory Committees may also provide scientific information and advice on such matters as the Council or MCAP may consider relevant.

Rule 29

The membership of Committees established according to Rule 28 shall each be determined by Council Resolution. The Chairs of Advisory Committees shall be nominated by the Committees from among Delegates and Experts and appointed by the Council. If the Chair (or

the Vice-Chair) of an Advisory Committee, when elected, is among the members nominated by the delegations, he/she shall cease to serve in that capacity and the Delegates who nominated him/her shall have the right to nominate another scientist as a member of the Committee.

PART III

ICES ADMINISTRATIVE REPORT

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THE INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA

An Introductory Note

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.

Scientific Observer status has been granted to Australia (CSIRO), Chile (Instituto de Fomento Pesquero (IFOP)), Greece (Institute of Marine Biology of Crete), New Zealand (National Institute of Water and Atmospheric Research), 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), with the General Secretary and Chair of the Consultative Committee as *ex officio* members, constitute the Bureau, the executive arm of ICES. 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 and Publications Committees advise the Council and the Bureau on financial and publications matters, respectively.

The General Secretary—the chief executive officer of ICES—heads a group of Professional and General Service staff currently numbering 35 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 Scientific Observer countries, 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 seven Science Committees providing a wide coverage of the main facets of marine science, two Advisory Committees, and a Consultative Committee. 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, upon 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 are entitled to appoint members to any of these groups. With the exception of meetings of 1) fish-stock assessment

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; 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 CM2000/4DEL01 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 new 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, particularly 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 will have 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 fo-

cus for advice that integrates consideration of the marine environment and fisheries in an ecosystem context, such as the ecosystem effects of fishing. The Committee will be at the forefront of the development of advice on ecosystem management (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 newly created 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 late 1998, ICES was charged with the co-ordination of a major program within GEF/Baltic Sea Regional Project (BSRP) that was proposed by the Helsinki Commission (HELCOM) in partnership with the International Baltic Sea Fishery Commission (IBSFC) and ICES. The above-mentioned institutions have been awarded a PDF Block B Grant (US\$ 350,000) to prepare, in close cooperation with the implementing agencies (World Bank and United Nations Development Programme), the Project Brief for conducting the GEF/ BSRP proper. Work started in 1999, but owing to unforeseen circumstances it was held up for ap-

proximately six months before resuming in 2000. The objective of the BSRP (which is envisaged to run for five years from July 2001) 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 is responsible for the component entitled Baltic Sea Large Marine Ecosystem Activities.

ICES/GLOBEC Office: The Office, which is housed within the ICES Secretariat in Copenhagen, 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 will require closer 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 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 Information* (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. 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.

PROGRESS REPORT ON ADMINISTRATION FOR THE YEAR 1 NOVEMBER 1999 TO 31 OCTOBER 2000

1 THE COUNCIL AND ITS MEMBERS

1.1 Country Membership

Lithuania had anticipated becoming the 20th Member Country of ICES in 1999. However, the ratification of the ICES Convention by the Lithuanian “Seimas” (Parliament) has not yet taken place.

1.2 Payment of National Contributions

As of 31 May 2000 all national contributions FOR THE financial Year 1999/2000 have been paid.

1.3 National Delegates

The following national Delegates have been announced since the 1999 Annual Science Conference (87th Statutory Meeting):

- a) Willy Vanhee was appointed to replace W. Vyncke as Delegate of Belgium;
- b) Georges Pichot was appointed to replace W. Vanhee as Delegate of Belgium;
- c) Paul Connolly and Micheal Ó Cinnéide were appointed to replace John Browne and David Griffith as Delegates of Ireland;
- d) Maarten Knoester was appointed to replace Dr Dik D. Tromp as Delegate of the Netherlands;
- e) R. Åkesson was appointed to replace Dr Ingemar Olsson as Delegate of Sweden;
- f) Lars Hernroth was appointed as Delegate of Sweden to replace Jan Thulin during his secondment as Coordinator of the GEF Baltic Regional Project.

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 1999 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 2000 Annual Science Conference as Doc. C.M. 2000/Gen:1.

2.1 IGBP

IGBP recognises ICES and PICES as regional co-sponsors of GLOBEC. The five-year plan of research drawn up by the ICES Working Group on Cod and Climate Change is included in the International Implementation Plan for GLOBEC which was published in 1999.

2.2 OSPAR

ICES has been represented at the following meetings of the OSPAR Commission and its subsidiary bodies:

- a) The third meeting in 1999 of the Environmental Assessment and Monitoring Committee (ASMO), held in Nanterre, France, from 29 November to 3 December 1999 (ICES Representative: ICES Environment Adviser).
- b) The Sixth Meeting of the Working Group on Concentrations, Trends, and Effects of Substances in the Marine Environment (SIME) held in Stockholm, Sweden, from 21–25 February 2000 (ICES Representative: ICES Environment Adviser).
- c) The Working Group on Inputs to the Marine Environment (INPUT), held in Lisbon, Portugal, from 17–21 January 2000. (ICES Representative: O. Swertz, Netherlands).
- d) A meeting of the Environmental Assessment and Monitoring Committee (ASMO), held in Hamburg, Germany, from 27–31 March 2000 (ICES Representative: ICES Environment Adviser).
- e) A meeting of the OSPAR Commission, held in Copenhagen, from 26–30 June 2000 (ICES Representatives: General Secretary and Environment Adviser).

Sections of the 1999 Report of ACME containing information and advice to OSPAR were presented and considered at all of the above-mentioned meetings.

The meeting of ASMO in March also prepared a Draft ICES Work Programme for 2001. This Draft Work Programme has been costed by the ICES Secretariat for consideration at the OSPAR meeting in June 2000. The OSPAR Commission viewed the Draft Work Programme and adopted a number of requests for scientific advice and data handling activities to be conducted by ICES during 2000.

The North Sea Conference Process

The ICES Secretariat is participating in two Issue Groups ("Fisheries" and "Species Habitats") to draft a report format to be used to develop the report for the Fifth North Sea Conference. This Conference is expected to be held in early 2002. The ICES Secretariat developed a discussion paper for a meeting of the 5th North Sea Conference Secretariat in Oslo in June 2000, and will help in supplying background material.

2.4 Helsinki Commission (HELCOM)

The meetings of HELCOM and its subsidiary bodies at which ICES has been represented include:

- a) The Tenth Meeting of the Environment Committee held in Copenhagen, Denmark, from 2-4 October 1999 (ICES Representative: ICES Environmental Data Scientist);
- b) The First Meeting of the Monitoring and Assessment Group (MONAS), in Tallin, Estonia from 8-12 May 2000. (ICES Representative: ICES Environment Adviser).

Scientific information and advice in response to requests from HELCOM, prepared by ACME at its June 1999 meeting, were presented to these meetings.

The General Secretary represented ICES at the Twenty-first Meeting of the Helsinki Commission held in Helsinki, Finland, from 20-22 March 2000. The Commission was informed of the activities that ICES has coordinated for HELCOM and the advice provided to its subsidiary groups during the past year.

On the basis of a review of the structure of the subsidiary bodies of the Helsinki Commission, a revised structure has been developed and implemented with effect from the beginning of 2000. The previous structure of Committees and Working Groups has been replaced by a structure comprised of a series of groups, i.e. a less hierarchical structure.

2.5 NEAFC

ICES provided NEAFC with advice as in previous years in accordance with the MoU between NEAFC and ICES. NEAFC has asked to receive the advice by 15 October. This is discussed in Section 3.5 below (ACFM). The Chair of ACFM and the Fisheries Adviser participated in the NEAFC Annual Meeting in November 1999, where they presented the ICES advice on fishery management.

2.6 NASCO

ICES provided NASCO with advice as in previous years, in accordance with the MoU between NASCO and ICES. NASCO has asked to receive the advice earlier than in previous years. The working procedures of ACFM were changed and ICES provided the advice

by 8 May 2000. This is discussed in Section 3.5. below (ACFM). The Chair of ACFM and the Fisheries Adviser participated in the NASCO Annual Meeting on 5-9 June in Miramichi, Canada, where the ICES advice on management of the North Atlantic Salmon was presented.

2.7 IBSFC

ICES provided IBSFC with advice as in previous years in accordance with the MoU between IBSFC and ICES. IBSFC asked for an in-year revision of the Cod assessment to be available in 2000. Thus, the working procedures of ACFM were changed and ICES provided the advice by 10 May 2000. This is discussed in Section 3.5. below (ACFM). The General Secretary, the Fisheries Adviser and the Chair of ACFM represented ICES at the 26th Session of IBSFC on 4-8 September 2000.

2.8 European Commission

ACFM

EC DG-Fish and ICES concluded an agreement (by way of an exchange of letters) specifying the terms under which the two organisations will cooperate. The agreement, in line with the Memoranda of Understanding between ICES and other Commissions, specifies the scope and the format of the advice requested by the EC, and the terms under which ICES costs are recouped.

ICES continued to provide EC DG-Fish with advice as in former years and an observer from DG-Fish was present at the May 2000 ACFM meeting, but not at the ACFM Sub-Group meetings in April when North Atlantic salmon and Baltic cod were dealt with.

There has been a general discussion of the timeliness of the advice – this is dealt with in Section 3.5 (ACFM).

ACME

The third meeting of the EEA, ETC/MC Inter-Regional Forum was held in Venice, Italy, in late September 1999, with ICES represented by the ICES Environmental Data Scientist. Three working groups were created at this meeting, covering the topics of environmental indicators, GIS, and data exchange and availability issues. A follow-up meeting to the Inter-Regional Forum was held at the premises of the EEA in Copenhagen on 17 December 1999 to further plan the work of these three working groups. ICES was represented at this meeting by the incoming General Secretary, D. de G. Griffith, the ICES Environment Adviser, and the ICES Environmental Data Scientist. The Environment Adviser also represented ICES at the first meeting of the Working Group on Indicators, held at the EEA.

2.9 AMAP and IASC

The Chair of the Oceanography Committee, Harald Loeng, represented ICES at the IASC Scoping Meeting in Washington on 28 February–1 March 2000 and at the subsequent programme workshop in Cambridge.

During 2000, under a second contract with the Arctic Monitoring and Assessment Programme (AMAP) ICES has served as the Thematic Data Centre for the monitoring data collected from the marine component of AMAP.

2.9.1 FAO

ICES continues to collaborate actively with FAO within the framework of the 1996 ICES/FAO Memorandum of Understanding. The Fisheries Adviser is developing a joint project on the presentation of information on fish stocks, status and trends. This project also involves ICCAT, NAFO and national organisations such as NOAA (USA) and DFO (Canada).

2.11 CWP

Two Working Groups under the Coordinating Working Party on Fisheries Statistics (CWP) met at ICES Headquarters from 10–12 February and 14–16 February 2000. The first Group discussed a joint publication of Atlantic Fisheries catch statistics between EUROSTAT, FAO, ICCAT, NAFO, and ICES. This project is being implemented, and the publication in the form of a CD ROM is expected to appear in the autumn of 2000. The second meeting discussed the harmonisation of the terminology used in advice based on the Precautionary Approach. The report of this meeting is now being discussed both by managers and by the Advisory Committees (ACFM and NAFO Scientific Committee).

2.12 IOC

The President attended the June 2000 IOC Executive Council meeting in his capacity as Canadian representative on the Executive Council. He drew to the attention of the IOC the ICES Centenary-related events and the initial Strategic Plan, and sought feedback from the IOC on the Plan. Following internal consultations, the Secretariat responded to a request from IOC for a nominee to take part in IOC's review of their Ocean Science in Relation to Living Marine Resources (OSLR). Hein Rune Skjoldal's name was put forward and accepted. IOC subsequently invited him to chair the review group.

3. MEETINGS AND OTHER ACTIVITIES ORGANISED BY THE COUNCIL

3.1 Conferences/Symposia

The Seventh International Conference on Artificial Reefs and Related Aquatic Habitats was held in San Remo, Italy, from 7–11 October 1999, co-sponsored by ICES. Josianne Støttrup (Denmark) represented ICES on this occasion.

The Symposium on “100 Years of Science under ICES” (Convener: Emory Anderson, USA) was held in Helsinki, Finland, from 1–4 August 2000. Selected papers will be published in the series *ICES Marine Science Symposia*.

The Symposium on “Hydrobiological Variability in the ICES Area, 1990–1999” (Co-Conveners: Bob Dickson, UK; Jens Meincke, Germany) will be held in Edinburgh, UK, from 8–10 August 2001. A Scientific Steering Committee has been established to assist the Co-Conveners in planning the Symposium.

Co-sponsorship is being sought from appropriate international organisations. IOC has already agreed to be a co-sponsor.

The Symposium on “Fisheries and Plankton Acoustics” (Conveners: François Gerlotto and J. Massé, France) will be held in Montpellier, France, from 10–14 June 2002 (C.Res. 1997/2:1). A Scientific Steering Committee will be established to assist the Co-Conveners in planning the Symposium. Co-sponsorship is being sought from appropriate international organisations.

For the Hydrobiological Variability meeting, the Scientific Steering Committee has been established. The co-sponsors are IOC, NAFF, CEFAS (Lowestoft), FRS Marine Laboratory (Aberdeen), and Institut für Meereskunde (Hamburg).

For 2001 there is a second ICES Symposium: “Capelin – What Are They Good For?” (see general information on our Symposia Website).

3.2 Dialogue Meetings

The Follow-Up to the 11th Dialogue Meeting was held in London, UK, on 8 February 2000. The meeting was attended by 54 participants from 13 Member Countries, as well as the European Commission (EC-Fish), IBSCF, NASCO, and NEAFC. A report of this meeting is available from the ICES Secretariat.

3.3 Environmental Dialogue Meeting, 7–8 September 2000

A preliminary report will be presented to the Delegates.

3.4 Bureau

The Bureau (Chair: S. Parsons, President of ICES) held its Meeting in Copenhagen, on 3-4 February 2000 to review and approve the draft ICES Secretariat Workplan for 1999/2000, and to consider key ICES issues. In addition, Per Wramner attended to present proposals for possible collaboration between ICES and UNEP/Global International Water Assessment (GIWA).

The Mid-Term Meeting of the Bureau was held at ICES Headquarters from 15-17 June 2000. During that meeting, the President, Robert Aps, Joe Horwood, Mike Sissenwine, and Roald Vaage presented the Report of the Meeting of the Bureau Working Group on the Advisory Process which was held in Redhill (UK) from 7-10 March 2000.

The Bureau met again on Monday 25 September 2000 in Brugge (Bruges) immediately prior to the 2000 Annual Science Conference (88th Statutory Meeting).

ICES Strategic Plan and the Open Forum

At the invitation of the Norwegian Delegates, the General Secretary visited Bergen, Oslo, and Tromsø, 10-12 May to give a series of presentations on the draft Strategic Plan. He addressed staff members of IMR Bergen (together with participants in the Arctic Fisheries Working Group), and senior officials of the Ministry of Fisheries and the Norwegian Research Council in Oslo. In Tromsø the audience consisted of scientists from the Fisheries College and the Fisheries & Aquaculture Institute; the General Secretary of NAMMCO also participated.

The outcome of the Open Forum on the draft Strategic Plan (26 September 2000) will be discussed at the Delegates meeting at 2000 ASC.

3.5 Advisory Committees

ACFM

Since the 1999 ICES Annual Science Conference, ACFM (Chair Tore Jakobsen) has held two meetings, both at ICES Headquarters, from 25 October to 2 November 1999 and 25 May to 1 June 2000. At both of these meetings the first three days were occupied by Sub-Groups to which the Chairs of relevant Assessment Working Groups were invited, followed by a plenary meeting.

All nationally nominated members and the Chair of one Science Committee were present at the meeting in October 1999. Observers from EC DG-Fish (O. Hagström), NAFO (M. Kingsley), the Faroe Islands, and the Greenland Home Government (H. í Jakupsstovu and J. Boje, respectively (both part-time)) also attended the meeting. The Chairs of five Stock Assessment Working Groups were also present for the Sub-Group meetings.

All nationally nominated members, a Chair and representatives of two Science Committees (part-time) were present at the meeting in May 2000. The Chairs of the seven Stock Assessment Working Groups, the reports of which were being discussed (for the Sub-Groups), were also present. Observers from EU DG-Fish (O. Hagström), the Faroe Islands, and the Greenland Home Government (J. Reinert and J. Boje, respectively, (both part-time)) also attended the meeting. The Chairs of seven Stock Assessment Working or Study Groups were present at the Sub-Groups prior to the plenary sessions of ACFM.

Quality Assurance of the Advisory Process

The Council adopted an advisory quality assurance policy at the 1999 ASC. In order to obtain more input into the process, the quality assurance issues have, in Spring 2000, been presented to the Assessment Working Groups. Based on the policy and the work carried out with a quality assurance consultant, who worked with the Secretariat in the first half of 1999, the Secretariat, in consultation with the Chair of ACFM, developed elements of implementation of this quality policy. Some of these elements were discussed at the May ACFM meeting. On the consistency and transparency issue, the Secretariat has developed three papers presented to ACFM: 1) on consistency of the advice; 2) how ACFM has performed in relation to the setting of reference points, and 3) a chapter on how to calculate reference points for the Quality Manual. Furthermore, ACFM adopted a procedure for the reviewing of assessment software, including adoption of specific programs to be allowed in the assessment process. In order to assist the review of the assessment, some Working Groups had filled in a checklist indicating the basis of the assessment.

Training in Fish Stock Assessment

The Resource Management Committee discussed this issue at its meeting in September 1999. The Secretariat has prepared a costed proposal which will be presented to the RMC in September 2000 for consideration. ACFM has been kept fully informed of the proposals.

Timeliness of Advice on Fisheries Management

In 1999 NASCO asked for the advice on North Atlantic salmon to be available earlier than hitherto, and agreed with ICES that the advice should become available around 10 May. The ACFM working procedure was thus amended, and WGNAS met early in April. A Sub-Group of ACFM (Chairs of WGNAS and ACFM, a reviewer (Jake Rice), assisted by the Fisheries Adviser, met immediately before Easter to review the Working Group Report and to draft the advice. This advice was then circulated and discussed by e-mail within ACFM. The advice was released on 8 May. This early release was much appreciated by NASCO. It is anticipated that a similar early release will also be possible in 2001.

IBSFC asked for an in-year revision of the advice on the TAC for cod for 2000 to be available on 10 May at the latest. This request was met, and the advice was released on 10 May following a procedure similar to that applied for the North Atlantic salmon advice.

ACFM reviewed the above procedure at its May 2000 meeting and concluded that it had worked reasonably satisfactorily. However, ACFM also found that this was partly due to the fact that there was no real scientific controversy concerning the advice. More concern was expressed on whether the procedure would work if there were more divided views inside ACFM on how the advice should be formulated. There was general agreement among all who had been involved in the ACFM Sub-Groups, that a two-days meeting was not too short and that a three-days meeting would be more than adequate to address the drafting of the review and advice.

ICES has received a request for advice including the desire by the EC, NEAFC, and Norway for a 15 October delivery date. The Chair of ACFM, the General Secretary, and the Fisheries Adviser met EC officials in January 2000 to clarify the background for the EC request. The Chair of ACFM and the Secretariat continue to work on possible changes in the ACFM time schedule and working procedures that would allow ICES to meet an earlier deadline than at present.

ACME

ACME (Chair: H.R. Skjoldal) held an extraordinary meeting at ICES Headquarters on 26 January to 2 February 2000 to handle three special requests: 1) scientific peer review of the OSPAR Quality Status Report 2000, 2) scientific review of the IMPACT II report and preparation of scientific advice for EC DG-FISH, and 3) finalisation of a report on "Status of Fisheries and Related Environment of Northern Seas" for the Nordic Council of Ministers. Members were present at the meeting from all member Countries, as well as the Environment Adviser, the ICES Oceanographer (part time), the ICES Fisheries Adviser (part-time), the Chair of the Working Group on Ecosystem Effects of Fishing Activities (Jake Rice) and the consultants who worked on the report for the Nordic Council (P. Degnbol and C. Symon). The Committee carried out the work requested and the resulting material was forwarded to the respective bodies after the meeting. The Nordic Council published the status report during the summer (ref. NORD 2000-10).

The regular meeting of ACME was held at ICES Headquarters from 5–10 June 2000. Members were present at the meeting from all Member Countries except the Netherlands. The Environment Adviser participated as well as the ICES Oceanographer (part-time), the ICES/GLOBEC Coordinator (part-time), the Chair of the Working Group on Statistical Aspects of Environmental Monitoring (S. Uhlig), and the Chair of the Working Group on Marine Mammal Habitats (A.

Bjørge) (part-time). The Committee compiled scientific information and advice on topics requested by the OSPAR Commission and the Helsinki Commission (HELCOM), particularly on quality assurance of marine monitoring, statistical aspects of the detection of trends in inputs of contaminants via rivers and the atmosphere, and potential impacts of the disposal of fish offal and discharges into the Baltic Sea. In addition, ACME completed and adopted a chapter, entitled "Marine, Migratory and Freshwater Fish in the Sea Area", for the HELCOM Fourth Periodic Assessment of the Marine Environment of the Baltic Sea, 1994-1998. It also prepared information and advice on other topics of interest to ICES Member Countries, including information on specific marine contaminants, fish disease issues, introductions and transfers of marine organisms, marine habitat mapping, and effects of extraction of marine sand and gravel on marine ecosystems. ACME also discussed potential frameworks for ecosystem-based environmental advice and integrated environmental assessments.

3.6 Consultative Committee

The Mid-Term Meeting of the Consultative Committee (Chair: Robin Cook) was held at ICES Headquarters from 12–14 June 2000 in accordance with C.Res.1999/2A01 to prepare a draft programme of sessions for the 2000 Annual Science Conference (Brugge (Bruges), Belgium) and to address other Terms of Reference set by the Council at the 1999 Annual Science Conference. The report of the meeting is available as Doc. C.M. 2000/A:5.

3.7 Working/Study Group Meetings and Workshops

The meetings of Working, Study, and other Groups and Workshops specified in C.Res.1999/2ACFM01–3G02 took place as planned, except for the Study Group on Baltic Herring and Sprat Maturity, and the Planning Group for Pelagic Acoustic Surveys in Sub-Areas VIII and XI. The former had to be cancelled because insufficient material was available to allow the Study Group to address its terms of reference. The latter did not take place because the objectives and deadlines for the acoustic surveys had already been defined at the first meeting of the EC project PELASSES. Changes also had to be made in the dates and/or venues of some other groups. The reports of Groups concerned with fish stock assessments which met from November 1999–May 2000 were reviewed by ACFM at its meeting from 29 May to 1 June 2000 (C.Res.1999/2ACFM01). The reports of Groups concerned with marine pollution and marine environmental protection matters were reviewed by ACME at its meeting from 5-10 June 2000 (C.Res.1999/2ACME01).

The list of the above meetings is given in **Annex 2**.

4 SECRETARIAT MATTERS

4.1 Staffing

The total number of people employed in the ICES Secretariat during the current Financial Year has been 34. These persons have occupied 10 posts at the Professional level, and 24 posts at the General Service level.

Bodil Chemnitz (Danish citizen) took up the post of Administrative Assistant (C3-grade) in the MOD Group on 1 February 2000 to succeed Karin Bundgaard.

Gillian Post (British citizen) resigned from her post as Administrative Assistant (C3-grade) in the MOD Group as per 30 April 2000.

Louise Scharff (British citizen) took up the post of Administrative Assistant (C3-grade) in the MOD Group on 1 June 2000 to succeed Gillian Post who resigned as per 30 April 2000.

Arne Facius (Danish citizen) has continued in temporary, part-time employment (P.1), under the supervision of the ICES Fisheries Adviser and the ICES Oceanographer, to provide computer programming assistance with the International Bottom Trawl Surveys (IBTS) database and two EC-projects (Old IBTS Data, and BITS: Baltic Survey Database).

Janus Larsen (Danish citizen) continued employment on a part-time basis in support of the work of the MAST Project VEINS, under the supervision of the ICES Oceanographer.

Lena Larsen (Danish citizen) has continued on a full-time basis in support of the work of two EC-projects (Old IBTS Data, and BITS: Baltic Survey Database) under the supervision of Henrik Sparholt.

Margaret Moody Personal Assistant to the General Secretary, duly celebrated her 30 years jubilee in the ICES Secretariat on 1 April 2000.

4.2 Data

After considerable planning discussions between the General Secretary and the Professional Secretaries, together with advice from the IT Manager, new arrangements for handling the ICES data in a more integrated fashion have been worked out. At its mid-term meeting the Bureau endorsed the proposed system, which aims to provide user-friendly, seamless and dynamic access to all ICES products (data, documentation and information). The Secretariat databases will be handled as an in-house distributed database system. Links will be established so users will have only one entry point to the data and information products. Integration will be achieved by having a single entry point and a search robot which, based on the user's request for information, will identify the

relevant databases, extract the requested data from the individual databases, and merge them to give the user a single integrated product.

The necessary internal changes will be implemented during the latter part of this year, supported by the filling of an existing staff vacancy, the recruitment of a Database Manager (as authorised last year to take effect from 1 November 2000), and appropriate training for selected members of the existing staff.

4.3 Communications

Recognising the need for ICES to develop a communications strategy, both outside and inside the ICES community, the Bureau agreed to recruit a Communications Officer. Appropriate budgetary provision has been made, funded mainly by utilising the vacant post formerly occupied by Ed Thomasson.

4.4 Improved Facilities and Equipment

A number of improvements have been made to the Headquarters facilities in the past year. These have included new carpeting in some of the offices, painting of the General Secretary's office, and a total overhaul of the internal lift.

Discussions continue with the Danish authorities and the owners of the Palægade building regarding major alterations. The plans, which are primarily aimed at improving the meeting facilities and the entrance, include the acquisition of the former jeweller's shop on the corner beside the ICES offices.

5 PUBLICATIONS

Activities with respect to publications since the 1999 Annual Science Conference (87th Statutory Meeting) are reviewed below.

5.1 ICES Journal of Marine Science (*Journal du Conseil*)

Volume 56(5), pages 571–794, was off press during its cover month, October 1999, and distributed in November.

Volume 56(6), pages 795–1074, with a cover date of December 1999, was off press and distributed in February 2000. It includes the proceedings of the ICES Symposium on "Confronting Uncertainty in the Evaluation and Implementation of Fisheries Management Systems", which was held in Cape Town, South Africa, from 16 to 19 November 1998. It is the seventh of the ICES Symposium numbers to be published in this series, and it was also registered as Volume 207 in the *ICES Marine Science Symposia* series.

The late publication date of Vol. 56(6) was attributable in some degree to the move of the publishers to new quarters in late autumn, but particularly to the departure

at the same time of the Production Editor for this number, which meant that interim arrangements had to be made for the transitional period. Subsequent numbers have also been, or will be, issued after their cover dates, in great part because of the failure of Guest Editors for ICES Symposium volumes to submit material as scheduled. This has led to an enormous build-up of papers from various symposia arriving at the same time, which has strained capacity and created both editorial and production problems that will affect several numbers in 2000.

One of the numbers so affected is “Brackish Water Ecosystems”, a set of proceedings stemming from the ICES Symposium of the same name, which was held in Helsinki, Finland, from 25 to 28 August 1998. While it was foreseen in advance that it would not be possible to publish the number in 1999, it was decided for other reasons that it would be best to issue it as a special supplement to Volume 56. Falling outside the regular proceedings schedule for the *ICES Journal*, all costs apart from those relating to work carried out by the Secretariat have been covered by funds secured by the Symposium Convener. This volume was off press in June 2000. It was the eighth of the ICES Symposium numbers to be issued in this series, and it was also registered as Volume 208 in the *ICES Marine Science Symposia* series.

The subscription rates for Volume 56 in 1999 were set at GBP 336 for institutional subscriptions and again at GBP 105 for personal subscriptions.

Volume 57(1), pages 1–187, with a cover date of February 2000, was published and distributed in April. In addition to standard articles it contains selected papers from the 1998 ASC Theme Session on “Impact of Cephalopods in the Food Chain and Their Interaction with the Environment”.

Volume 57(2), pages 189–464, was off press in early June 2000. It was issued as “Recruitment Dynamics of Exploited Marine Populations: Physical-Biological Interactions. Part 1” and stems from the ICES Symposium held in Baltimore, Maryland, USA, from 22 to 24 September 1997. Part 1 contains 27 papers, the number delivered by the Guest Editor by 1 January 2000. Originally projected as a proceedings volume containing more than sixty papers that would be published in 1998, it has not been possible to realise these plans. During the September 1999 meeting of the Publications Committee it was decided that there was no other option than to proceed to publish the material available, since there was no information forthcoming on when the Guest Editor would submit the remainder. This was the ninth of the ICES Symposium numbers to be issued in this series, and it was also registered as Volume 209 in the *ICES Marine Science Symposia* series.

Volume 57(3), pages 465–792 was off press in August. It contains 37 articles stemming from the ICES/SCOR Symposium on the “Ecosystem Effects of Fishing”,

which was held in Montpellier, France, from 16 to 19 March 1999. This was the tenth set of symposium proceedings to be issued in this series, and it was also registered as Volume 210 in the *ICES Marine Science Symposia* series.

Volume 57(4), pages 793–1297, will be a standard issue containing articles on different topics. It will be nearly four times the size of a normal number to accommodate the overflow caused by the need to publish six Symposium Volumes in close succession.

Volume 57(5) will carry the proceedings of the ICES Symposium on “Marine Benthos Dynamics: Environmental and Fisheries Impacts”, based on the meeting held on Crete, Greece, from 5 to 7 October 1998.

Volume 57(6) is scheduled to carry the proceedings of the ICES Symposium on “Population Dynamics of *Calanus* in the North Atlantic”, stemming from the meeting held in Tromsø, Norway, from 24 to 27 August 1999.

For Volume 57 in 2000 the rates were set at GBP 360 for institutional subscriptions and GBP 120 for personal subscriptions.

In 1996 Academic Press launched IDEAL (International Digital Electronic Access Library) and APPEAL (Academic Press Print and Electronic Access Licence) on the World Wide Web for its serial publications, including the *ICES Journal*. IDEAL makes tables of contents and abstracts, *inter alia*, available to any WWW user, and APPEAL provides facsimile texts of full articles on a site-licence basis. Full-text versions of articles in the *ICES Journal* are thus available to a very wide public, and Academic Press has continued to take other initiatives to increase awareness of its contents. The first tangible results were seen in the report on the ICES/Academic Press joint account for 1998, showing an income of GBP 1,113 from the site-licensing system (ca. 10% of total revenues).

For 1999, the joint account continued the trend of recent years, increasing the annual profit to GBP 25,209 and definitively eliminating the cumulative debt. GBP 9,787 was thus shared 50/50 between Academic Press and ICES.

The subscription rates for Volume 58 in 2001 have been set at GBP 400 for institutional, and GBP 140 for personal subscriptions.

5.2 ICES Marine Science Symposia (*Actes du Symposium*)

Volume 201, issued in November 1995, is the last set of ICES Symposium proceedings to be published solely under this series title. Volume number 200 and most others beginning with number 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 202–210 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) and 57(3). It is expected that the proceedings of the ICES Symposium on “100 Years of Science under ICES” will be published in this series.

5.3 ICES Cooperative Research Report (Rapport des Recherches Collectives)

The following numbers in the *ICES Cooperative Research Reports* series have been published since the 1999 Annual Science Conference:

- No. 236 Report of the ICES Advisory Committee on Fishery Management, 1999 (Part 1 and Part 2), dated February 2000.
- No. 237 Seventh Intercomparison Exercise on Trace Metals in Sea Water, issued in April 2000.
- No. 238 Report on Echo Trace Classification, dated March 2000.
- No. 239 Report of the ICES Advisory Committee on the Marine Environment, dated June 2000.
- No. 240 Report on the Young Scientists Conference on Marine Ecosystem Perspectives, dated August 2000.

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. It has now been agreed that future publication of these and related statistics will appear on CD-ROM. Plans have been drawn up with FAO and EUROSTAT, working in conjunction with ICCAT and NAFO, and other key organisations, and will be announced as progress permits. A first version of the ICES database for the CD-ROM was operational in March and a version of the full CD-ROM is expected in early autumn.

5.5 ICES Identification Leaflets for Plankton (Fiches d'Identification du Plancton)

Following protracted delays in the production of this series owing to a severe shortage of capacity in the Secretariat, Nos 181–185 on, respectively, Acartiidae, Euchaetidae, Phyllodocidae, *Prorocentrum* Dinophyceae); and *Pseudo-nitzschia* (Diatomophyceae/Bacillatiophyceae) were published in July 1999.

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)

Similar delays to those described above for the preceding series have also affected progress on this series, but Nos. 51–56 on respectively *Stephanostomum tenue*, Gaffkemia, *Diplostomum spathaceum*, Pasteurellosis, *Flexibacter maritimus*, and Streptococcosis were published in September 1999.

5.8 ICES Techniques in Marine Environmental Sciences

Four new issues have been published since the 1999 Annual Science Conference. They are:

- No. 24 Biological effects of contaminants: Use of imposex in the dogwhelk (*Nucella lapillus*) as a bioindicator of tributyltin (TBT) pollution.
- No. 25 Biological effects of contaminants: Measurement of DNA adducts in fish by ³²P-postlabelling.
- No. 26 Biological effects of contaminants: Quantification of metallothionein (MT) in fish liver tissue.
- No. 27 Soft bottom macrofauna: Collection, treatment, and quality assurance of samples (Revision of No. 8).

It is intended that several additional numbers will be published by the end of the current year.

5.9 ICES Annual Report

The *ICES Annual Report for 1998/1999* was issued in March 2000.

5.10 ICES/CIEM Information

Issue No. 35 of this newsletter was issued in May 2000, and No. 36 have been issued in September 2000, in both Web and paper versions.

ANNEX 1

MEETINGS AT WHICH ICES WAS REPRESENTED BY OBSERVERS

- 1) Eighteenth Annual Meeting of the North-East Atlantic Fisheries Commission (NEAFC), London 22–26 November 1999. ICES Representatives: Chair of ACFM and Fisheries Adviser.
- 2) Third Meeting In 1999 of the OSPAR Environmental Assessment and Monitoring Committee (ASMO), Nanterre, France, 29 November to 3 December 1999. ICES Representative: Environment Adviser.
- 3) Working Group on Trend Reporting in Fisheries. FAO, Rome, 30 November to 3 December 1999. ICES Representative: Fisheries Adviser.
- 4) Third Inter-Regional Forum (IRF) Follow-Up Meeting, Copenhagen, Denmark, 17 December 1999. ICES Representative: General Secretary Elect, Environment Adviser, Environmental Data Scientist.
- 5) CWP Intersessional Meeting, ICES Headquarters, 10–11 February 2000. ICES Representative: Fisheries Adviser.
- 6) Meeting of the OSPAR Working Group on Inputs to the Marine Environment (INPUT), Lisbon, Portugal, 17–21 January 2000. ICES Representative: O. Swertz.
- 7) CWP Working Group on PA Terminology, ICES Headquarters, 14–16 February 2000. ICES Representative: Fisheries Adviser.
- 8) Sixth Meeting of the OSPAR Working Group on Concentrations, Trends, and Effects of Substances in the Marine Environment (SIME), Stockholm, Sweden, 21–25 February 2000. ICES Representative: Environment Adviser.
- 9) ACIA Scoping Meeting, held in Washington D.C., USA, 28 February to 1 March 2000. ICES Representative: Harald Loeng.
- 10) Twenty-First Meeting of the Helsinki Commission, Helsinki, Finland, 20–22 March 2000. ICES Representative: General Secretary.
- 11) Meeting of the OSPAR Environmental Assessment and Monitoring Committee (ASMO), Hamburg, Germany, 27–31 March 2000. ICES Representative: Environment Adviser.
- 12) First meeting of the IRF Working Group on Indicators, Copenhagen, Denmark, 12–13 April 2000. ICES Representatives: L. Føyn, Environment Adviser.
- 13) EuroGOOS/ICES Workshop on Bioecological Observations in Operational Oceanography, 7–8 April 2000. ICES Representative: ICES/GLOBEC Coordinator.
- 14) Nordic Council of Ministers. PA Science and Industry. Copenhagen, 26–27 April 2000. ICES Representative: Fisheries Adviser.
- 15) ICCAT Methods Working Group, Madrid, Spain, 8–11 May 2000. ICES Representative: Fisheries Adviser.
- 16) HELCOM's First meeting of the Monitoring and Assessment Group (MONAS), Tallinn, Estonia, 8–12 May 2000. ICES Representative: Environment Adviser.
- 17) OSPAR Coordinating Committee Meeting, London, 15 May 2000. ICES Representative: General Secretary.
- 18) IBSFC Working Group on Long-Term Management Objectives and Strategies, Turku, Finland, 22–24 May 2000. ICES Representative: ICES Fisheries Assessment Scientist.
- 19) First meeting of the HELCOM Nature Conservation and Coastal Zone Management Group, Tisvildeleje, Denmark, 22–26 May 2000. ICES Representative: Environment Adviser.

- 20) American Society for Limnology and Oceanography, Copenhagen, Denmark, 5–8 June 2000, ICES Representative: ICES/GLOBEC Coordinator.
- 21) 17th Annual Meeting of NASCO, Port Miramichi, Canada, 5-9 June 2000. ICES Representative: Fisheries Adviser.
- 22) NAFO Scientific Council, Halifax, NS, Canada, 10 June 2000. ICES Representative: Fisheries Adviser.
- 23) HELCOM Preparation Meeting of the Fourth Periodic Assessment, Copenhagen, Denmark, 13–16 June 2000. ICES Representative: Environmental Data Scientist.
- 24) OSPAR Commission, Copenhagen, Denmark, 26–30 June 2000. ICES Representatives: General Secretary and Environment Adviser.
- 25) EEA Inter-Regional Forum Working Group on Data Flow, Copenhagen, Denmark, 3 July 2000. ICES Representatives: Environment Adviser and Environmental Data Scientist.
- 26) EurOCEAN 2000, Hamburg, 29 August to 1 September 2000. ICES Representative: ICES/GLOBEC Coordinator
- 27) 26th Session of IBSFC, Warsaw, Poland, 4–8 September 2000. ICES Representatives: General Secretary, Fisheries Adviser, and Chair of ACFM.
- 28) COASTBASE Project Meeting, La Spezia, Italy, 13–15 September 2000. ICES Representative: Environmental Data Scientist.
- 29) QUASIMEME Advisory Board Meeting, Copenhagen, Denmark, 13–14 October 2000. ICES Representative: Environmental Data Scientist.
- 30) Ninth Annual Meeting of PICES, Hakodate, Japan, 21–25 October 2000. ICES Representative: ICES/GLOBEC Coordinator.

ANNEX 2

ICES WORKING/STUDY/STEERING GROUP MEETINGS AND WORKSHOPS IN 1997/1998

Advisory Committee on Fishery Management

1. Study Group on the Biology and Assessment of Deep-Sea Fisheries Resources
(C. Res. 1999/2ACFM02)
Chair: J. M. Gordon
Held at ICES Headquarters, 4–10 February 2000
Report available as Doc.C.M.2000/ACFM:08.
2. CWP Intersessional Meeting
(C.Res. 1999/3ACFM01)
Held at ICES Headquarters, 10–16 February 2000
Report available as Doc.C.M.2000/ACFM:17.
3. Herring Assessment Working Group for the Area South of 62°N
(C.Res. 1999/2ACFM04)
Chair: E.J. Simmonds
Held at ICES Headquarters, 14–23 March 2000
Report available as Doc.C.M.2000/ACFM:10.
4. Study Group on Discard and By-Catch Information
(C.Res. 1999/2ACFM05)
Chair: J. Cotter
Held at ICES Headquarters, 20–22 March 2000
Report available as Doc.C.M.2000/ACFM:11.
5. Baltic Salmon and Trout Assessment Working Group
(C.Res.1999/2ACFM06)
Chair: T. Pakarinen
Held in Gdynia, Poland, 29 March to 7 April 2000
Report available as Doc.C.M.2000/ACFM:12.
6. Working Group on North Atlantic Salmon
(C.Res. 1999/2ACFM07)
Chair: N. O'Maoileidigh
Held at ICES Headquarters, 3–13 April 2000
Report available as Doc.C.M.2000/ACFM:13.
7. Baltic Fisheries Assessment Working Group
(C.Res.1999/2ACFM8)
Chair: T. Raid
Held at ICES Headquarters, 10–19 April 2000
Report available as Doc.C.M.2000/ACFM:14.
8. North-Western Working Group
(C.Res.1999/2ACFM9)
Chair: J. Boje
Held at ICES Headquarters, 26 April to 4 May 2000
Report available as Doc.C.M.2000/ACFM:15.
9. Northern Pelagic and Blue Whiting Fisheries Working Group
(C.Res.1999/2ACFM10)
Chair: J. Carscadden
Held at ICES Headquarters, 26 April to 4 May 2000
Report available as Doc.C.M.2000/ACFM:16.

10. Working Group on the Assessment of Northern Shelf Demersal Stocks
(C.Res.1999/2ACFM11)
Chair: S. Reeves
Held at ICES Headquarters, 13–22 June 2000
Report available as Doc. C.M. 2001/ACFM:01.
11. Arctic Fisheries Working Group
(C.Res.1999/2ACFM12)
Chair: R. Bowering
Held at ICES Headquarters, 22–31 August 2000
Report available as Doc. C.M. 2001/ACFM:02.
12. ICES/EIFAC Working Group on Eels
(C.Res. 1999/2ACFM13)
Chair: L. Marshall
Held in St Andrews, NB, Canada, 28 August to 1 September 2000
Report available as Doc. C.M. 2001/ACFM:03.
13. Pandalus Assessment Working Group
(C.Res.1999/2ACFM14)
Held in Lysekil, Sweden, 4–7 September 2000
Report available as Doc. C.M. 2001/ACFM:04.
14. Working Group on the Assessment of Southern Shelf Demersal Stocks
(C.Res.1999/2ACFM15)
Chair: A. Biseau
Held at ICES Headquarters, 4–13 September 2000
The Report will be available as Doc. C.M. 2001/ACFM:05.
15. Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy
(C.Res.1999/2ACFM16)
Chair: D. Skagen
To be held at ICES Headquarters, 14–23 September 2000
The Report will be available as Doc. C.M. 2001/ACFM:06.
16. Joint ICES/NAFO Working Group on Harp and Hooded Seals
C.Res.1999/2ACFM18
Chair: T. Haug
To be held at ICES Headquarters, 2–6 October 2000
The Report will be available as Doc. C.M. 2001/ACFM:08.
17. Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak
(C.Res.1999/2ACFM17)
Chair: F. van Beek
To be held at ICES Headquarters, 3–12 October 2000
The Report will be available as Doc. C.M. 2001/ACFM:07.

Advisory Committee on the Marine Environment

18. Working Group on Ecosystem Effects of Fishing Activities
(C.Res. 1999/2ACME02)
Chair: D. J. Rice
Held at ICES Headquarters, 22 November to 1 December 1999.
Report available as Doc.C.M.2000/ACME:02.

19. ICES/HELCOM Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea
(C.Res. 1999/2ACME03)
Chair: Dr G. Martin
Held at ICES Headquarters, 14–16 February 2000
Report available as Doc.C.M.2000/ACME:03.
20. ICES/HELCOM Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea
(C.Res. 1999/2ACME04)
Chair: M. Krysell
Held in Berlin, Germany, 14–17 February 2000
Report available as Doc.C.M.2000/ACME:04.
21. ICES/OSPAR Steering Group on Quality Assurance of Biological Measurements Related to Eutrophication Effects
(C.Res. 1999/2ACME05)
Chair: H. Rees
Held at ICES Headquarters, 15-18 February 2000
Report available as Doc.C.M.2000/ACME:05.
22. Study Group on the Estimation of the Annual Amount of Discards and Fish Offal in the Baltic Sea
(C.Res. 1999/ACME06)
Chair: J. Dalskov
Held at ICES Headquarters, 22–24 February 2000
Report available as Doc.C.M.2000/ACME:06.
23. Working Group on Introductions and Transfers of Marine Organisms
(C.Res.1999/2ACME07)
Chair: J.T. Carlton
Held in Tallin, Estonia, 27–29 March 2000
Report available as Doc.C.M.2000/ACME:07.

Oceanography Committee

24. Study Group on Incorporation of Process Information into Stock-Recruitment Models
(C.Res. 1999/2C01)
Chair: D.C. O'Brien
Held at Lowestoft, UK, 23–26 November 1999
Report available as Doc.C.M.2000/C:01.
25. Working Group on Recruitment Processes
(C.Res. 1999/2C03)
Chair: P. Pepin
Held in Bergen, Norway, 8–10 March 2000
Report available as Doc.C.M.2000/C:03.
26. Working Group on Seabird Ecology
(C.Res. 1999/2C04)
Chair: M. Tasker
Held in Wilhelmshaven, Germany, 20–23 March 2000
Report available as Doc.C.M.2000/C:04.
27. Working Group on Shelf Seas Oceanography
(C.Res.1999/2C05)
Chair: B. Sjöberg
Held in Barcelona, Spain, 20–25 March 2000
Report available as Doc.C.M.2000/C:05.
28. ICES/IOC Working Group on Harmful Algal Bloom Dynamics
(C.Res.1999/2C06)
Chair: K. Kononen
Held in Barcelona, Spain, 20–24 March 2000
Report available as Doc.C.M.2000/C:06.

29. Working Group on Phytoplankton Ecology
(C.Res.1999/2C10)
Chair: D. Mills
Held in Narragansett, Rhode Island, USA, 4–8 April 2000
Report available as Doc.C.M.2000/C:10.
30. Working Group on Marine Data Management
(C.Res.1999/2C08)
Chair: R. Gelfeld
Held in Hamburg, Germany, 1–13 April 2000
Report available as Doc.C.M.2000/C:08.
31. Working Group on Oceanic Hydrography
(C.Res.1999/2C07)
Chair: B. Turrell
Held in Sopot, Poland, 10–13 April 2000
Report available as Doc.C.M.2000/C:07.
32. Working Group on Zooplankton Ecology
(C.Res. 1999/2C09)
Chair: L. Valdés
Held in Hawaii, USA, 17–19 April 2000
Report available as Doc.C.M.2000/C:09.
33. Workshop on the Dynamics of Growth in Cod
(C.Res. 1999/2C12)
Co-Chairs: N. Andersen, G. Ottersen and D. Swain
Held in Dartmouth, Nova Scotia, Canada, 8–10 May 2000
Report available as Doc.C.M.2000/C:12.
34. ICES/GLOBEC Working Group on Cod and Climate Change
(C.Res. 1999/2C11)
Chair: K. Drinkwater
Held in Dartmouth, Nova Scotia, Canada, 11–13 May 2000
Report available as Doc.C.M.2000/C:11.
35. ICES-IOC Steering Group on GOOS
(C.Res. 1999/2C02)
Co-Chairs: R. Sætre and M. Sinclair (IOC representative)
To be held in Southampton, UK, 23–25 October 2000
Report available as Doc.C.M.2000/C:02.

Fisheries Technology Committee

36. Study Group on Mesh Measurements Methodology
(C.Res. 1999/2B02)
Chair: R. Fonteyne
Held in IJmuiden, Netherlands, 8–9 April 2000
Report available as Doc. C.M. 2000/B:02.
37. Study Group on Methods for Measuring the Selectivity of Static Gear
(C.Res. 1999/2B01)
Chair: A. Carr
Held in IJmuiden, Netherlands, 8–9 April 2000
Report available as Doc. C.M. 2000/B:01.
38. Working Group on Fisheries Acoustics Science and Technology
(C.Res.1999/2B04))
Chair: F. Gerlotto
Held in IJmuiden, Netherlands, 10–14 April 2000
Report available as Doc. C.M. 2000/B:04.

39. Working Group on Fishing Technology and Fish Behaviour
(C.Res.1999/2B03)
Chair: A. Engås
Held in IJmuiden, Netherlands, 10–14 April 2000
Report available as Doc. C.M. 2000/B:03.
40. Joint Session of the Working Group on Fisheries Acoustics and Technology and the Working Group on Fishing Technology and Fish Behaviour
(C.Res.1999/2B05)
Chair: J. Massé
Held in IJmuiden, Netherlands, on 12 April 2000
Report available as Doc. C.M. 2000/B:05.

Resource Management Committee

41. Study Group on Market Sampling Methodology
(C.Res. 1999/2D01)
Chair: M.A. Pastoors
Held in Aberdeen, Scotland, 24–26 January 2000
Report available as Doc. C.M. 2000/D:01.
42. Working Group on Fishery Systems
(C.Res. 1999/2D02)
Co-Chairs: P. Degnbol and J. Sutinen
To be held at ICES Headquarters from 13–16 June 2000
Report available as Doc. C.M. 2000/D:02.
43. Planning Group on Surveys on Pelagic Fish in the Norwegian Sea
(C.Res. 1999/2D03)
Chair: J.C. Holst
To be held in Tórshavn, Faroe Islands, from 16–18 August 2000
The Report will be available as Doc. C.M. 2000/D:03.
44. Workshop on Synthesis of Surveys on Pelagic Fish in the Norwegian Sea and Adjacent Areas
(C.Res. 1999/2D04)
Chair: J.C. Holst
To be held in Bergen, Norway, 16–20 October 2000
The Report will be available as Doc. C.M. 2000/D:04.
45. Workshop on International Analysis of Market Sampling and the Evaluation of Raising Procedures and Data Storage
C.Res. 1999/2D05)
Chair: M.A. Pastoors
To be held in Lowestoft, UK, 28–30 November 2000
The Report will be available as Doc. C.M. 2000/D:05.
46. Study Group to Evaluate the Effects of Multispecies Interactions
(C.Res. 1999/2D06)
Chair: M. Bravington
To be held in Lowestoft, UK, 6–1- December 2000
The Report will be available as Doc. C.M. 2000/D:06.

Marine Habitat Committee

47. Marine Chemistry Working Group
(C.Res. 1999/2E01)
Chairman: B. Pedersen
Held at ICES Headquarters, 28 February to 3 March 2000
Report available as Doc. C.M. 2000/E:01.

48. Working Group on Marine Mammal Habitats
(C.Res. 1999/2E02)
Chair: A. Bjørge
Held in Helsinki, Finland, 28 February to 3 March 2000
Report available as Doc. C.M. 2000/E:02.
49. Working Group on Marine Sediments in Relation to Pollution
(C.Res. 1999/2E03)
Chair: M. Kersten
Held at ICES Headquarters, 6–10 March 2000
Report available as Doc. C.M. 2000/E:03.
50. Working Group on Biological Effects of Contaminants
(C.Res. 1999/2E04)
Chair: P. Matthiessen
Held in Nantes, France, 27–31 March 2000
Report available as Doc. C.M. 2000/E:04.
51. Working Group on Statistical Aspects on Environmental Monitoring
(C.Res. 1999/2E05)
Chair: S. Uhlig
Held in Nantes, France, 27–31 March 2000
Report available as Doc. C.M. 2000/E:05.
52. Study Group on Marine Habitat Mapping
(C.Res. 1999/2E06)
Chair: E. Jagtman
Held in The Hague, Netherlands, 10–13 April 2000
Report available as Doc. C.M. 2000/E:06.
53. Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem
(C.Res.1999/2E07)
Chair: J. Side
Held in Gdansk, Poland, 11–14 April 2000
Report available as Doc. C.M. 2000/E:07.
54. Benthos Ecology Working Group
(C.Res. 1999/2E08)
Chair: K. Essink
Held in Walpole, Maine, USA, 26–30 April 2000
Report available as Doc. C.M. 2000/E:08.
55. Study Group on Ecosystem Assessment and Monitoring
(C.Res. 1999/2E09)
Chair: L. Føyn
Held at ICES Headquarters, 8–12 May 2000
Report available as Doc. C.M. 2000/E:09.

Mariculture Committee

56. Working Group on Pathology and Diseases of Marine Organisms
(C.Res.1999/2F01)
Chair: S. Møllergaard
Held in Bremen, Germany, 29 February to 4 March 2000
Report available as Doc. C.M. 2000/F:01
57. Working Group on the Application of Genetics in Fisheries and Mariculture
(C.Res.1999/2F03)
Chair: M. Møller Hansen
Held in Leuven, Belgium, 3-6 April 2000
Report available as Doc. C.M. 2000/F:03

58. Working Group on Environmental Interactions of Mariculture
(C.Res.1999/2F02)
Chair: I. Davies
Held in Aberdeen, Scotland, 27 April to 2 May 2000
Report available as Doc. C.M. 2000/F:02
59. Working Group on Marine Fish Culture
(C.Res. 1999/2F04)
Chair: J. Castell
Held in St Andrews, Canada, 5–7 June 2000
Report available as Doc. C.M. 2000/F:04

Living Resources Committee

60. Working Group on Mackerel and Horse Mackerel Egg Surveys
(C.Res. 1999/2G01)
Chair: C. Hammer
Held in Santander, Spain, 18–21 January 2000
Report available as Doc. C.M. 2000/G:01
61. Planning Group for Herring Surveys
(C.Res. 1999/2G02)
Co-Chairs: E. Torstensen and K.-J. Stæhr
Held in Bergen, Norway, 1–4 February 2000
Report available as Doc. C.M. 2000/G:02
62. Planning Group for Pelagic Acoustic Surveys in ICES Sub-Areas VIII and IX
(C.Res. 1999/2G03)
Chair: V. Marques
Held in Lisbon, Portugal, 2–4 February 2000
Report available as Doc. C.M. 2000/G:03
63. Working Group on Cephalopod Fisheries and Life History
(C.Res. 1999/2G04)
Chair: G. Pierce
Held in Aberdeen, Scotland, 7–11 February 2000
Report available as Doc. C.M. 2000/G:04.
64. Working Group on Marine Mammal Population Dynamics and Trophic Interactions
(Res. 1999/2G05)
Chair: G.T. Waring
Held in Helsinki, Finland, 28 February to 3 March 2000
Report available as Doc. C.M. 2000/G:05.
65. Study Group on Life History of Nephrops
(C.Res. 1999/2G06)
Chair: N. Bailey
Held in Reykjavik, Iceland, 2–5 May 2000
Report available as Doc. C.M. 2000/G:06.
66. Workshop on the Estimation of Spawning Stock Biomass of Sardine
(C.Res. 1999/2G07)
Chair: A. Lago de Lanzos
Held in Vigo, Spain, 13–16 June 2000
Report available as Doc. C.M. 2000/G:07.
67. Workshop on Identification and Staging of Mackerel and Horse Mackerel Eggs
(C.Res. 1999/2G08)
Chair: S. Milligan
To be held in Lowestoft, UK, 13–17 November 2000
The Report will be available as Doc. C.M. 2000/G:08.

Baltic Committee

68. Study Group on Baltic Cod Age Reading
(C.Res. 1999/2H01)
Chair: Y. Walther
Held in Karlskrona, Sweden, 27–31 March 2000
Report available as Doc. C.M. 2000/H:01.
69. Baltic International Fish Survey Working Group
(C.Res. 1999/2H02)
Chair: E. Aro
Held at ICES Headquarters, 3–7 April 2000
Report available as Doc. C.M. 2000/H:02.
70. Study Group on the Scientific Basis for Ecosystem Advice in the Baltic
(C.Res. 1999/2H03)
Co-Chairs: T. Osborn and M. Pliksh
To be held in Gdynia, Poland, 19–20 June 2000
The Report will be available as Doc. C.M. 2000/H:03.
71. Baltic Herring Age-Reading Study Group
(C.Res. 1999/2H04)
Chair: G. Kornilovs
To be held in Tvärminne, Finland, 20–24 November 2000
The Report will be available as Doc. C.M. 2000/H:03.
72. Study Group on Multispecies Predictions in the Baltic
(C.Res. 1999/2H05)
Chair: E. Aro
To be held at ICES Headquarters, 11–15 December 2000.
The Report will be available as Doc. C.M. 2000/H:05.

**Overview of ICES Membership, Organisation and International Collaboration, and Acronyms Appearing in the
ICES Annual Report 2000**

OFFICIALS OF THE COUNCIL/ADMINISTRATEURS DU CONSEIL

President/Président

L. Scott Parsons (*until 31 October 2000/jusqu'au 31 octobre 2000*)

International Marine Science, DFO

220 Laurier Avenue West

Suite 640

Ottawa, ONT K1A 0E6, Canada

Tel: +1 613 998 5158

Fax: +1 613 998 5200

E-mail: parsonss@dfo-mpo.gc.ca

Pentti Mälkki (*as from 1 November 2000/dès du 1er novembre 2000*)

Institute of Marine Research

P.O. Box 33

FI-0031 Helsinki, Finland

Tel: +358 9613 941

Fax: +358 9613 944 94

E-mail: malkki@fimr.fi

Chair of Consultative Committee/Président du Comité Consultatif

Robin Cook (*until 31 December 2000/jusqu'au 31 décembre 2000*)

FRS Marine Laboratory

P.O. Box 101, Victoria Road

Aberdeen AB11 9DB, United Kingdom

Tel: +44 1224 295 423

Fax: +44 1224 295 511

E-mail: cookrm@marlab.ac.uk

Interim Chair of Consultative Committee/Président intérimaire

Alain Maucorps (*as from 1 January 2001/dès du 1er janvier 2001*)

6, rue de Candé

44800 St Herblain, France

Tel: +33 240 46 62 18

E-mail: alain.maucorps@freesurf.fr

Chair of Management Committee of the Advisory Process/Président du Comité de Gestion pour le Processus d'Avis

Gerd Hubold

Institut für Seefischerei

Palmaille 9

22757 Hamburg, Germany

Tel: +49 40 38 905 177

Fax: +49 40 38 905 263

E-mail: hubold.ish@bfa-fisch.de

Chair of Advisory Committee on Fishery Management/Président du Comité d'Avis sur la Gestion des Pêches

Tore Jakobsen

Institute of Marine Research

P.O. Box 1870

N-5817 Bergen, Norway

Tel: +47 552 38636

Fax: +47 552 38636

E-mail: torej@imr.no

Interim Chair of Advisory Committee on the Marine Environment/Président intérimaire du Comité d'Avis sur l'Environnement Marin

Stig Carlberg
SMHI
International Relations Department
Byggnad 31, Nya Varvet
S-426 71 Västra Frölunda
Sweden
Tel: +46 31 751 8076
Fax: +46 31 751 8980
E-mail: stig.carlberg@smhi.se

Chair of the Advisory Committee on Ecosystems/Président du Comité d'Avis sur les Ecosystèmes

Hein Rune Skjoldal
Institute of Marine Research
P.O. Box 1870
N-17 Bergen
Norway
Tel: +47 552 38636
Fax: +47 552 38636
E-mail: hein.rune.skjoldal@imr.no

DELEGATES/DÉLÉGUÉS

BELGIUM

Rudy De Clerck
Sea Fisheries Department
Ankerstraat 1
B-8400 Ostende
Tel: +32 59 320388
Fax: +32 59 330629
E-mail: rdeclerck@unicall.be

Georges Pichot
MUMM
Gulledelle 100
B-1200 Brussels
Tel: +32 2 773 2111
Fax: +32 2 770 6972
E-mail: g.pichot@mumm.ac.be

CANADA

Scott Parsons
International Marine Science,
DFO
220 Laurier Avenue West
Suite 640
Ottawa, ONT K1A 0E6
Canada
Tel: +1 613 998 5158
Fax: +1 613 998 5200
E-mail: parsonss@dfo-mpo.gc.ca

Michael M. Sinclair

Department of Fisheries and
Oceans
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, NS B2Y 4A2
Tel: +1 902 426 4890
Fax: +1 902 426 1506
E-mail: sinclairm@mar.dfo-
mpo.gc.ca

DENMARK

Niels Axel Nielsen
Danish Institute for Fishery Research
Jægersborgvej 64-66
2800 Lyngby
Tel: +45 33 92 37 23
Fax: +45 33 11 82 71
E-mail: nan@dfu.min.dk

Mogens Schou

Ministry of Food, Agriculture and
Fisheries
Holbergsgade 2
1057 Copenhagen K
Tel: +45 33 92 3723
Fax: +45 33 145 042
E-mail: msc@fvm.dk

ESTONIA

Robert Aps
Ministry of the Environment
Fisheries Department
Kopli str. 76
10416 Tallinn
Tel: +372 660 3347
Fax: +372 699 8040
E-mail: aps@kopli.envir.ee

Evald Ojaveer

Estonian Marine Institute
Viljandi Road 18b
11216 Tallinn
Tel: +372 628 1568
Fax: +372 628 1563
E-mail: e.ojaveer@ness.sea.ee

FINLAND

Matti Perttilä

Institute of Marine Research
P.O. Box 33
00931 Helsinki
Tel: +358 9613 941
Fax: +358 9613 944 94
E-mail: matti.perttila@fimr.fi

Petri Suuronen

Finnish Game and Fisheries
Research Institute
Pukinmaenaukio 4, P.O. Box 6
00721 Helsinki
Tel: +358 205 751 220
Fax: +358 205 751 201
E-mail: petri.suuronen@rktl.fi

FRANCE**Marcel Chaussepied**

Centre de Brest
B.P. 70, F-29280 Plouzané
Tel: +33 298 224 323
Fax: +33 298 224 548
E-mail:
marcel.chaussepied@ifremer.fr

André Forest

IFREMER
Rue de l'Île d'Yeu
B.P. 21105
44311 Nantes Cedex 03
Tel: +33 240 374238
Fax: +33 240 374045
E-mail: andre.forest@ifremer.fr

GERMANY**Alfred Post**

Bundesforschungsanstalt für
Fischerei
Institut für Seefischerei
Palmaille 9,
22767 Hamburg
Tel: +49 40 38 905 168
Fax: +49 40 38 905 263
E-mail: post.ish@bfa-fisch.de

Dietrich Schnack

Institut für Meereskunde und der
Universität Kiel
Düsternbrooker Weg 20
24105 Kiel
Tel: +49 431 597 3957
Fax: +49 431 565 876
E-mail: dschnack@ifm.uni-kiel.de

ICELAND**Jakob Jakobsson**

Marine Research Institute
P.O. Box 1390, Skúlagata 4
121 Reykjavík
Tel: +354 552 0240
Fax: +354 562 3790
E-mail: jakjak@hafro.is

Jóhann Sigurjónsson

Marine Research Institute
P.O. Box 1390, Skúlagata 4
121 Reykjavík
Tel: +354 552 0240
Fax: +354 562 3790
E-mail: johann@hafro.is

IRELAND**Paul Connolly**

The Marine Institute
Laboratory Complex
Abbottstown
Dublin 15
Tel: 353 1 8210111
Fax: 353 1 8205078
E-mail: paul.connolly@marine.ie

Micheal Ó Cinnéide

The Marine Institute
Laboratory Complex
Abbottstown
Dublin 15
Tel: 353 1 8210111
Fax: 353 1 8205078
E-mail:
micheal.ocinneide@marine.ie

LATVIA**Normunds Riekstins**

Latvian National Board of Fisheries
Ministry of Agriculture
2 Republikas Laukums
1010 Riga
Tel: +371 732 3877
Fax: +371 733 4892
E-mail: fish@com.latnet.lv

Maris Vitins

Latvian Fisheries Research
Institute
Daugavgrivas Street 8
1007 Riga
Tel: +371 7612 409
Fax: +371 7616 946
E-mail: m_vitins@latfri.lv

NETHERLANDS**Gerard J. van Balsfoort**

Ministry of Agriculture
Nature Management and Fisheries
Postbus 20401
2500 Ex Gravenhage
Tel: +31 70 3785 227
Fax: +31 70 3786 153
E-mail: g.j.van.balsfoort@
viss.agro.nl

Maarten Knoester

National Institute for Coastal and
Marine Management/RIKZ
P.O. Box 20907
2500 EX The Hague
Tel: +31 70 311 4250
Fax: +31 70 3114 321
E-mail:
m.knoester@rikz.rws.minvenw.nl

NORWAY**Kjell Olsen**

The Norwegian College of Fishery
Science
Breivika, 9037 Tromsø
Tel: +47 77 644 6001
Fax: +47 77 646 020
E-mail: kjello@nfh.uit.no

Roald Vaage

Institute of Marine Research
P.O. Box 1870 Nordnes
5817 Bergen
Tel: +47 55 238 519
Fax: +47 55 238 586
E-mail: roald.vaage@imr.no

POLAND**Thomasz Linkowski**

Sea Fisheries Institute
ul. Kollataja 1
81-332 Gdynia
Tel: +48 58 621 6830
Fax: +48 58 620 2831
E-mail: tlink@mir.gdynia.pl

Zdzislaw Gandera

Department of Fisheries
Ministry of Agriculture and
Rural Development
Ul. Wspólna 30
00-930 Warsaw
Tel: +48 22 628 08 26
Fax: +48 22 623 2204

PORTUGAL**Marcelo Vasconcelos**
IPIMAR

Avenida de Brasília
1400 Lisbon
Tel: +351 21 302 7000
Fax: +351 21 301 5948
E-mail: Marcelo@ipimar.pt

Graça Pestana

IPIMAR
Avenida de Brasília
1400 Lisbon
Tel: +351 21 302 7109
Fax: +351 21 301 5948
E-mail: gpestana@ipimar.pt

RUSSIA**B.N. Kotenev**

Russian Federal Research Institute
of Fisheries and Oceanography
(VNIRO)
17 Verkhne Krasnoselskaya
Moscow 107140
Tel: +7 095 264 9387
Fax: +7 095 264 9187

Valeri N. Shleinik

PINRO
6 Knipovitch Street
183767 Murmansk
Tel: +7 875 257 2532
+47 789 105 18
Fax: +7 875 257 5331
+47 789 105 18
E-mail: inter@pinro.murmansk.ru

SPAIN**Eduardo Lopez-Jamar**

Instituto Español de Oceanografía
Avenida de Brasil 31
28020 Madrid
Tel: +34 91 597 0840
Fax: +34 91 555 1954
E-mail: eduardo.ljamar@md.ieo.es

Álvaro Fernández

Instituto Español de Oceanografía
Avenida de Brasil 31
28020 Madrid
Tel: +34 91597 08 40
Fax: +34 91 555 1954
E-mail:
alvaro.fernandez@md.ieo.es

SWEDEN**Rolf Åkesson**

Ministry of Agriculture
and Fisheries
S-10333 Stockholm
Tel: +46 840 51122
Fax: +46 81 05061
E-mail:
rolf.akesson@agriculture.ministry.
se

Lars Hernroth

Institute of Marine Research
Box 4
453 21 Lysekil
Tel: +46 523 18700
Fax: +46 523 13977
E-mail:
lars.Hernroth@fiskeriverket.se

UNITED KINGDOM**Joe W. Horwood**

CEFAS, Lowestoft Laboratory
Pakefield Road
Lowestoft, Suffolk NR33 0HT
Tel: +44 1502 524 248
Fax: +44 1 502 524 513
E-mail: l.m.a.sivyer@cefasc.co.uk

Bill Turrell

FRS Marine Laboratory
P.O. Box 101, Victoria Road
Aberdeen AB11 9DB
Tel: +44 1224 876 544
Fax: +44 1224 295 511
E-mail: turrellb@marlab.ac.uk

UNITED STATES OF AMERICA**Michael Reeve**

National Science Foundation
Division of Ocean Sciences
Room 725
4201 Wilson Boulevard
Arlington, VA 22230
Tel: +1 703 306 1582
Fax: +1 703 306 0390
E-mail: mreeve@nsf.gov

Michael Sissenwine

NOAA
National Marine Fisheries Service
166 Water Street
Woods Hole, MA 02543
Tel: +1 508 495 2233
Fax: +1 508 495 2232
E-mail:
Michael.Sissenwine@noaa.gov

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Frederik Arrhenius (*as from 1 January 2001/dès du 1er janvier 2001*)
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<i>ICES Fisheries Statistics</i>	Fisheries Adviser/Conseiller des Pêches
<i>ICES Cooperative Research Reports</i>	General Secretary/ Secrétaire Général
<i>ICES Identification Leaflets for Plankton</i>	John A. Lindley ¹
<i>ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish</i>	Sharon McGladdery ²
<i>ICES Oceanographic Data Lists and Inventories</i>	ICES Oceanographer/ Océanographe du CIEM
<i>ICES Journal of Marine Science</i>	Niels Daan, ³ Chief Editor/Rédacteur-en-Chef Editors: Michael P. Chadwick ⁴ John R. G. Hislop ⁵ John W. Ramster ⁶
<i>ICES Marine Science Symposia</i>	Editor specially appointed for each volume/un rédacteur est spécialement désigné pour chaque volume
<i>ICES Techniques in Marine Environmental Sciences</i>	Environment Adviser/ Conseiller de l'Environnement

¹John A. Lindley
Sir Alister Hardy Foundation
Citadel Hill
Plymouth PL1 2PB, United Kingdom
Tel: +44 1762 633 133
Fax: +44 1752 633 102

²Sharon McGladdery
Gulf Fisheries Centre
P.O. Box 5030
Moncton, NB E1C 9B6, Canada
E-mail: mcgladderys@mar.dfo-mpo.gc.ca

³Niels Daan
Netherlands Institute for Fishery Investigations
P.O. Box 68
1970 AB IJmuiden, Netherlands
E-mail: n.daan@rivo.dlo.nl

⁴Michael P. Chadwick
Gulf Fisheries Centre
P.O. Box 5030
Moncton, NB E1C 9B6, Canada
E-mail: chadwickm@mar.dfo-mpo.gc.ca

⁵John R. Hislop
FRS, The Marine Laboratory
P.O. Box 101, Victoria Road
Aberdeen AB11 9DB, United Kingdom
E-mail: hislopjrg@marlab.ac.uk

⁶John W. Ramster
3 Woodside Avenue
Bridge of Weir P11 3PQ, United Kingdom
E-mail: jramster@lineone.net

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Chair of Advisory Committee on Ecosystems/ Président du Comité d'Avis sur les Écosystèmes	Hein Rune Skjoldal

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Under the terms of Council Resolution 4 DEL01 (see pages 214–215), 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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Chair of Resource Management Committee/ Président du Comité de la Gestion des Ressources	Rob Stephenson (to/jusqu'au 31.12.2000) Carl O'Brien (from/dès 01.01.2001)
Chair of Baltic Fish Committee/ Président du Comité des Poissons de la Baltique	Tom Osborn

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ICES COMMITTEES AND THEIR SUBSIDIARY GROUPS

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Management Committee for the Advisory Process (MCAP)

Advisory Committee on Ecosystems (ACE)

Working Group on Marine Mammal Population Dynamics and Habitats [WGMMPH]

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]

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]

Working Group on the Assessment of Southern Shelf Demersal Stocks [WGSSDS]

Pandalus Assessment Working Group [WGPAND]

Herring Assessment Working Group for the Area South of 62°N [HAWG]

Study Group on Herring Assessment Units in the Baltic Sea [SGHAUB]

Study Group on the Evaluation of Current Assessment Procedures for North Sea Herring [SGEHAP]

Study Group on the Precautionary Approach [SGPA]

Study Group on Sea Bass [SGBASS]

Study Group on Baltic Herring and Sprat Maturity [SGBHSM]

Study Group on Discard and By-Catch Information [SGDBI]

Advisory Committee on the Marine Environment (ACME)

Working Group on Introductions and Transfers of Marine Organisms [WGITMO]

Working Group on Ecosystem Effects of Fishing Activities [WGECO]

ICES/HELCOM Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea [SGQAC]

ICES/HELCOM Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea [SGQAB]

ICES/OSPAR Steering Group on Quality Assurance of Biological Measurements Related to Eutrophication Effects [SGQAE]

ICES/IOC/IMO Study Group on Ballast Water and Other Ship Vectors [SGBOSV]

Planning Group for the Ecological Quality Objective Requests [PGEQO]

Planning Group for a Workshop on Ecosystem Models [PGEM]

Workshop on Deep-Seabed Survey Technologies [WKDSST]

Consultative Committee (CONC)

Fisheries Technology Committee (FTC)

Working Group on Fisheries Acoustics Science and Technology [WGFAST]

Working Group on Fishing Technology and Fish Behaviour [WGFTFB]

Study Group on Mesh Measurement Methodology [SGMESH]

Study Group on Target Strength Estimation in the Baltic Sea [SGTSEB]

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 on an ICES/IOC Microplankton Protist List [SGPHYT]

Study Group on the Incorporation of Process Information into Stock-Recruitment Models [SGPRISM]

Study Group on Modelling of Physical/Biological Interactions [SGMPI]

Steering Group for the ICES/GLOBEC North Atlantic Regional Office [SGNARO]

ICES-IOC Steering Group on GOOS [SGGOOS]

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]

Planning Group on Surveys on Pelagic Fish in the Norwegian Sea [PGSPFN]

Study Group to Evaluate the Effects of Multispecies Interactions [SGEEMI]

Planning Group on Redfish Stocks [PGRS]

Steering Group on Courses in Fish Stock Assessment Techniques [SGCFAT]

Workshop on an International Analysis of Market Sampling and the Evaluation of Raising Procedures and Data-Storage [software] [WKIMS]

Workshop on a Synthesis on Pelagic Fish in the Norwegian Sea and Adjacent Waters [WKSSPF]

Workshop on FLEKSIBEST [WKFLEK]

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 [WGSAEM]

Working Group on Marine Sediments in Relation to Pollution [WGMS]

Marine Chemistry Working Group [MCWG]

Study Group on Ecosystem Assessment and Monitoring [SGEAM]

Steering Group for a Sea-Going Workshop on Pelagic Biological Effects Methods [SGSEA]

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]

Living Resources Committee (LRC)

Stock Identification Methods Working Group [SIMWG]

Working Group on Mackerel and Horse Mackerel Egg Surveys [WGMEGS]

Working Group on *Crangon* Fisheries and Life History [WGCRAH]

Working Group on Cephalopod Fisheries and Life History [WGCEPH]

Working Group on Beam Trawl Surveys [WGBEAM]

Study Group on Elasmobranch Fishes [SGEF]

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 for Herring Surveys [PGHERS]

Planning Group on Comparing the Structures of Marine Ecosystems in the ICES Area [PGECML]

Workshop on the Identification and Staging of Mackerel and Horse Mackerel Eggs [WKMHME]

Baltic Committee (BCC)

Baltic International Fish Survey Working Group [WGBIFS]

Study Group on Baltic Cod Age-Reading [SGBCAR]

Baltic Herring Age-Reading Study Group [BHARSG]

Study Group on Multispecies Predictions in the Baltic [SGMPB]

Study Group on Salmon Scale-Reading Problems [SGSSR]

Study Group on GEOHAB Implementation in the Baltic [SGGIB]

Workshop on the Scientific Basis for Ecosystem Advice in the Baltic [WKSBEAB]

DIRECTORY OF ICES COMMITTEES AND SUBSIDIARY GROUPS AND ASSOCIATED 2000 COUNCIL RESOLUTIONS

Resolutions originating from the organisational structure at the 2000 Annual Science Conference. This is not identical to the Overview of ICES Committees and Their Subsidiary Groups on pp. 254–255.

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CHAIRS OF ICES SUBSIDIARY GROUPS ASSIGNED TO PARENT COMMITTEE

PRÉSIDENCE DES GROUPES SUBSIDIAIRES CIEM AFFECTÉS À LEUR COMITÉ DE SOURCE

The Membership Lists for the following Study/Working 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 242–244, or from the Chairs themselves.

ADVISORY COMMITTEE ON FISHERY MANAGEMENT/ COMITÉ D'AVIS SUR LA GESTION DE LA PÊCHE

EIFAC/ICES Working Group on Eels/Groupe de travail EIFAC/CIEM sur les anguilles

W. Dekker (Netherlands), Chair

Working Group on *Nephrops* Stocks/Groupe de travail sur les stocks de *nephrops*

F. Redant (Belgium), Chair

Joint ICES/NAFO Working Group on Harp and Hooded Seals/Groupe de travail CIEM/NAFO conjoint sur les phoques du Groenland et les phoques à capuchon

Tore Haug (Norway), Chair

Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak/Groupe de travail sur l'évaluation des stocks démersaux dans la Mer du Nord et le Skagerrak

Martin Pastoors (Netherlands), Chair

Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy/Groupe de travail sur l'évaluation des stocks de maquereaux, de chinchards, de sardines et d'anchois

D. Skagen (Norway), Chair

Working Group on the Assessment of Northern Shelf Demersal Stocks/Groupe de travail sur l'évaluation des stocks démersaux du plateau continental nord

M. Armstrong (UK), Chair

North-Western Working Group/Groupe de travail nord-ouest

Jesper Boje (Denmark), Chair

Northern Pelagic and Blue Whiting Fisheries Working Group/Groupe de travail sur la pêche pélagique du nord et du merlan bleu

A. Gudmundsdóttir (Iceland), Chair

Baltic Salmon and Trout Assessment Working Group/Groupe de travail sur l'évaluation des stocks de saumon et de truite dans la Baltique

Tapani Pakarinen (Finland), Chair

Baltic Fisheries Assessment Working Group/Groupe de travail sur l'évaluation de la pêche dans la Baltique

M. Pliksh (Estonia), Chair

Working Group on North Atlantic Salmon/Groupe de travail sur le saumon de l'Atlantique Nord

N. O'Maoileidigh (Ireland), Chair

Arctic Fisheries Working Group/Groupe de travail sur la pêche de l'Arctique

S. Mehl (Norway), Chair

Working Group on the Assessment of Southern Shelf Demersal Stocks/Groupe de travail sur l'évaluation des stocks démersaux du plateau continental du sud

Alain Biseau (France), Chair

Pandalus* Assessment Working Group/Groupe de travail sur l'évaluation du *pandalus

Bengt Sjöstrand (Sweden), Chair

Herring Assessment Working Group for the Area South of 62°N/Groupe de travail sur l'évaluation des stocks de hareng pour la zone au sud de 62°N

M. Basson (France), Chair

Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources/Groupe de travail sur la biologie et l'évaluation des stocks de ressources halieutiques des grands fonds

O.A. Bergstad (Norway), Chair

Study Group on Baltic Herring and Sprat Maturity/Groupe d'étude sur la maturité du hareng et de l'esprot de la Mer Baltique

Hiltrun Müller (Germany), Chair

Study Group on Discard and By-Catch Information/Groupe d'étude sur les rejets et les captures accessoires

J. Cotter (UK), Chair

Study Group on the Further Development of the Precautionary Approach to Fishery Management/Groupe d'étude sur le développement de l'approche de précaution dans la gestion des pêches

R.C.A. Bannister (UK), Chair

Study Group on Herring Assessment Units in the Baltic Sea/Groupe d'étude sur les unités d'évaluation pour le hareng de la mer Baltique

E. Ojaveer and Dr G. Kornilovs (Estonia), Co-Chairs

Study Group on the Evaluation of Current Assessment Procedures for North Sea Herring/Groupe d'étude pour l'examen des procédures actuelles d'estimation du hareng de la Mer du Nord

J. Simmonds (UK), Chair

Study Group on Seabass/Groupe d'étude sur le bar commun

M. Pawson (UK), Chair

Study Group on Discard and By-Catch Information/Group d'étude concernant les rejets et les prises accessoires

J. Cotter (UK), Chair

**ADVISORY COMMITTEE ON THE MARINE ENVIRONMENT/
COMITÉ D'AVIS SUR L'ENVIRONNEMENT MARIN**

Working Group on Introductions and Transfers of Marine Organisms/Groupe de travail sur les introductions et les transferts d'organismes marins

S. Gollasch (Germany), Chair

ICES/HELCOM Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea/Groupe directeur CIEM/HELCOM sur l'assurance de qualité des mesures chimiques dans la Mer Baltique

E. Patuszak (Poland), Chair

ICES/HELCOM Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea/Groupe directeur CIEM/HELCOM sur l'assurance de qualité des mesures biologiques dans la Mer Baltique

G. Martin (Estonia), Chair

ICES/OSPAR Steering Group on Quality Assurance of Biological Measurements Related to Eutrophication Effects/Groupe directeur CIEM/OSPAR sur l'assurance de qualité des mesures biologiques relatives aux effets de l'eutrophication

Hubert L. Rees (UK), Chair

ICES/IOC/IMO Study Group on Ballast Water and Other Ship Vectors/Groupe d'étude CIEM/COI/OMI sur les eaux de ballast et autres modes d'introduction par les navires

S. Gollasch (Germany), Chair

Working Group on Ecosystem Effects of Fishing Activities/Groupe de travail sur les effets écologiques des activités de pêche

J. Rice (Canada), Chair

Planning Group for the Ecological Quality Objective Requests/Groupe de planification pour les demandes sur les objectifs de qualité

H.-R. Skjoldal (Norway), Chair

Planning Group for a Workshop on Ecosystem Models/Groupe de planification pour un atelier sur les modèles écologiques

C. Frid (UK), Chair

Workshop on Deep-Seabed Survey Technologies/Atelier sur la technologie des campagnes d'études des fonds sous-marines

J. Noji (Norway), Chair

ADVISORY COMMITTEE ON ECOSYSTEMS/COMITÉ D'AVIS SUR LES ECOSYSTÈMES

Working Group on Marine Mammal Population Dynamics and Habitats/Groupe de travail sur les dynamiques de la population et les habitats des mammifères marins

Arne Bjørge (Norway), Chair

**FISHERIES TECHNOLOGY COMMITTEE/
COMITÉ SUR LA TECHNOLOGIE DE PÊCHE**

Working Group on Fisheries Acoustics Science and Technology/Groupe de travail sur l'étude de la science et la technologie acoustique de la pêche

Y. Simard (Canada), Chair

Working Group on Fishing Technology and Fish Behaviour/Groupe de travail sur la technologie de pêche et le comportement des poissons

D. Somerton (USA), Chair

Joint Session of the Working Group on Fishing Technology and Fish Behaviour and the Working Group on Fisheries Acoustics Science and Technology/Session Conjointe du groupe de travail sur la technologie de pêche et le comportement des poissons et le groupe de travail sur l'étude de la science et la technologie acoustique de la pêche

Jacques Massé (France) and Y. Simard (Canada), Co-Chairs

Study Group on Mesh Measurement Methodology/Groupe d'étude sur la méthodologie des mesures des maillages

R. Fonteyne (Belgium), Chair

Study Group on Target Strength Estimation in the Baltic Sea/Groupe d'étude sur l'estimation des index de reflection en la Mer Baltique

F. Arrhenius (Sweden), Chair

Planning Group on the HAC Data Exchange Format/Groupe de planification sur le format d'échange des données HAC

D. Reid (UK), Chair

**OCEANOGRAPHY COMMITTEE/
COMITÉ SUR L'Océanographie**

Working Group on Recruitment Processes/Groupe de travail sur les processus de recrutement

P. Pepin (Canada), Chair

ICES/GLOBEC Working Group on Cod and Climate Change/Groupe de travail CIEM/GLOBEC sur la morue et les changements du climat

Kenneth Drinkwater (Canada), Chair

Working Group on Oceanic Hydrography/Groupe de travail sur l'hydrographie océanique

W. Turrell (UK), Chair

Working Group on Marine Data Management/Groupe de travail sur la gestion des données marines

R. Gelfeld (USA), Chair

Working Group on Seabird Ecology/Groupe de travail sur l'écologie des oiseaux de mer

Mark Tasker (UK), Chair

Working Group on Zooplankton Ecology/Groupe de travail sur l'écologie du zooplancton

L. Valdés (Spain), Chair

Working Group on Phytoplankton Ecology/Groupe de travail sur l'écologie du phytoplancton

D. Mills (UK), Chair

ICES/IOC Working Group on Harmful Algal Bloom Dynamics/Groupe de travail CIEM/COI sur la dynamique des éclosions planctoniques nuisibles

K. Kononen (Finland), Chair

Study Group on ICES/IOC Microplankton Protist List/Groupe d'étude sur la liste des protistes microplanctoniques du CIEM/COI

Lars Elder (Sweden), Chair

Study Group on the Incorporation of Process Information into Stock-Recruitment Models/Groupe d'étude sur la prise en compte des différents mécanismes dans les modèles de relation stock-recrutement

C. O'Brien (UK), Chair

Study Group on Modelling of Physical/Biological Interactions/Groupe d'étude sur le modelage des interactions physiques/biologiques

C. Hannah (Canada), Chair

ICES/IOC Steering Group on GOOS/Groupe directeur CIEM/COI sur GOOS

Roald Sætre (Norway) and IOC Representative (To be appointed), Co-Chairs

Steering Group for the ICES/GLOBEC North Atlantic Regional Office/Groupe directeur du bureau CIEM/GLOBEC pour la région atlantique nord

M. Reeve (USA) and Dr Mike Sinclair (Canada), Co-Chairs

**RESOURCE MANAGEMENT COMMITTEE/
COMITÉ SUR LA GESTION DES RESSOURCES**

International Bottom Trawl Survey Working Group/Groupe de travail sur les campagnes internationales de chaluts de fond

A. Newton (UK), Chair

Working Group on Fishery Systems/Groupe de travail sur les systèmes de pêche

Poul Degnbol (Denmark) and Dr J. Sutinen (USA), Co-Chairs

Working Group on Methods of Fish Stock Assessment/Groupe de travail sur les méthodes d'évaluation des stocks de pêches

K. Patterson (UK), Chair

Study Group to Evaluate Effects of Multispecies Interactions/Groupe d'étude pour évaluer les effets des interactions multi-espèces

M. Bravington (UK), Chair

Steering Group on Courses in Fish Stock Assessment Techniques/Groupe directeur pour la mise en place de cours sur les techniques d'évaluation des stocks

R. Stephenson (Canada), Chair

Planning Group on Redfish Stocks/Groupe de planification sur les stocks de sébastes

T. Sigurdsson (Iceland), Chair

Planning Group on Surveys on Pelagic Fish in the Norwegian Sea/Groupe de planification sur les campagnes des poissons pélagiques dans la Mer Norvégienne

J.C. Holst (Norway), Chair

Workshop on an International Analysis of Market Sampling and the Evaluation of Raising Procedures and Data Storage (software)/Atelier d'analyse internationale de l'échantillonnage des captures commerciales, les méthodes d'élevage des échantillons et le stockage des données (logiciels)

M. Pastoors (Netherlands), Chair

Workshop on a Synthesis of Surveys on Pelagic Fish in the Norwegian Sea and Adjacent Areas/Atelier de synthèse des campagnes sur les poissons pélagiques en la Mer de Norvège et dans les zones adjacentes

Jens Christian Holst (Norway), Chair

Workshop on FLEXIBEST/Atelier sur FLEXIBEST

K. Guldbrandsen Frøysa (Norway), Chair

**MARINE HABITAT COMMITTEE/
COMITÉ SUR L'HABITAT MARIN**

Benthos Ecology Working Group/Groupe de travail sur l'écologie de la faune benthique

K. Essink (Netherlands), Chair

Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem/Groupe de travail sur les effets d'extraction des sédiments marins sur l'écosystème marin

J. Side (UK), Chair

Working Group on Biological Effects of Contaminants/Groupe de travail sur les effets biologiques des contaminants

K. Hylland (Norway), Chair

Working Group on Statistical Aspects of Environmental Monitoring/Groupe de travail sur les aspects statistiques de la surveillance de l'environnement

Steffen Uhlig (Germany), Chair

Working Group on Marine Sediments in Relation to Pollution/Groupe de travail sur les sédiments marins par rapport à la pollution

S. Rowlatt (UK), Chair

Marine Chemistry Working Group/Groupe de travail sur la chimie marine

R. Law (UK), Chair

Working Group on Marine Habitat Mapping/Groupe travail sur la cartographie de l'habitat marin

Eric Jagtman (Netherlands), Chair

Study Group on Ecosystem Assessment and Monitoring/Groupe d'étude sur l'évaluation et le suivi des écosystèmes

Lars Føyn (Norway), Chair

Steering Group for a Sea-Going Workshop on Pelagic Biological Effects Methods/Groupe directeur sur la mise sur pied d'un atelier à la mer sur les méthodes d'analyse des effets biologiques dans le domaine pélagique

K. Hylland (Norway), Chair

**MARICULTURE COMMITTEE/
COMITÉ SUR LA MARICULTURE**

Working Group on Marine Fish Culture/Groupe de travail sur la culture marine des poissons

J. Castell (Canada), Chair

Working Group on the Application of Genetics in Fisheries and Mariculture/Groupe de travail sur l'application de la génétique dans la pêche et la mariculture

M. Møller Hansen (Denmark), Chair

Working Group on Environmental Interactions of Mariculture/Groupe de travail sur les interactions environnementales de la mariculture

Ian Davies (UK), Chair

Working Group on Pathology and Diseases of Marine Organisms/Groupe de travail sur la pathologie et les maladies des organismes marins

Stig Møllergaard (Denmark), Chair

**LIVING RESOURCES COMMITTEE/
COMITÉ SUR LES RESSOURCES VIVANTES**

Stock Identification Methods Working Group/Groupe de travail sur les méthodes d'identification des stocks

Kevin Friedland, Dr J. Waldman (USA), and S. Cadrin (USA), Co-Chairs

Working Group on Mackerel and Horse Mackerel Egg Surveys/Groupe de travail sur les études d'oeufs de maquereaux et de chinchards

C. Hammer (Germany), Chair

Working Group on Crangon Fisheries and Life History/Groupe de travail sur la pêche et stades de vie des *crangon*

Axel Temming (Germany), Chair

Working Group on Cephalopod Fisheries and Life History/Groupe de travail sur la pêche et stades de vie des céphalopodes

G. Pierce (UK), Chair

Working Group on Beam Trawl Surveys/Groupe de travail sur les campagnes de chaluts à perche

G. Piet (Netherlands), Chair

Study Group on Elasmobranch Fishes/Groupe d'étude sur les poissons élastombranchés

Paddy Walker (Netherlands), Chair

Planning Group for Herring Surveys/Groupe de planification sur les études du hareng

P.G. Fernandes (UK), Chair

Planning Group on Comparing the Structures of Marine Ecosystems in the ICES area/Groupe de planification sur la comparaison des structures des écosystèmes marins dans la zone du CIEM

John G. Pope (Norway), Chair

Study Group on the Biology and Life History of Crabs/Groupe d'étude sur la biologie et stades de vie des crabes

R. Dufour (Canada), Chair

Study Group on the Estimation of Spawning Stock Biomass of Sardine and Anchovy/Groupe d'étude sur l'estimation de la biomasse des reproducteurs de sardine et d'anchois

Y. Stratoudakis (Portugal), Chair

BALTIC COMMITTEE/COMITÉ SUR LA BALTIQUE

Baltic International Fish Survey Working Group/Groupe de travail sur les campagnes internationales des poissons baltiques

Eero Aro (Finland), Chair

Study Group on Multispecies Predictions in the Baltic/Groupe d'étude sur les prévisions multisécifiques en la Mer Baltique

Eero Aro (Finland), Chair

Study Group on Baltic Cod Age-Reading/Groupe d'étude sur la lecture d'âge de la morue dans la Baltique

Y. Walther (Sweden), Chair

Study Group on Salmon Scale-Reading Problems/Groupe d'étude sur les problèmes de lectures des écailles de saumon

E. Ikonen (Finland), Chair

Study Group on GEOHAB Implementation in the Baltic/Groupe d'étude sur la mise en place de GEOHAB en la Mer Baltique

K. Kononen (Finland), Chair

Workshop on the Scientific Basis for Ecosystem Advice in the Baltic/Atelier sur les bases scientifiques pour un avis sur les écosystèmes de la Mer Baltique

H. Ojaveer (Estonia), K. Myrberg (Finland), and H. Dahlin (Sweden), Co-Chairs

NAMES AND ADDRESSES OF COUNCIL OFFICIALS AND CHAIRS OF COMMITTEES AND GROUPS

Michael Armstrong
DANI
Newforge Lane
Belfast BT9 5PX
Northern Ireland
United Kingdom
Tel: +44 12 32 255 507
Fax: +44 12 32 282 244
e-mail: mike.armstrong@dani.gov.uk

Eero Aro
Finnish Game and Fisheries Research
Institute
P.O. Box 6
FI-00721 Helsinki
Finland
Tel: +358 205 751 253
Fax: +358 205 751 201
E-mail: eero.aro@rktl.fi

Fredrik Arrhenius
Institute of Marine Research
Box 4
S-453 21 Lysekil
Sweden
Tel: +46 523 18746
Fax: +46 523 13977
E-mail: fredrik.arrhenius@fiskeriverket.se

Colin Bannister
CEFAS
Lowestoft Laboratory
Lowestoft
Suffolk NR33 0HT
United Kingdom
Tel: +44 1502 562244
Fax: +44 1502 513865
E-mail: r.c.a.bannister@cefasc.co.uk

Marinelle Basson
CEFAS
Lowestoft Laboratory
Lowestoft
Suffolk NR33 0HT
United Kingdom
Tel: +44 1502 562244
Fax: +44 1502 513865
E-mail: m.basson@cefasc.co.uk

O. A. Bergstad
Institute of Marine Research
Flødevigen Marine Res. Station
N-4817 His
Norway

Alain Biseau
IFREMER
8, rue François Toullec
F-56100 Lorient
France
Tel: +33 297 873 820
Fax: 33 297 873 801
E-mail: abiseau@ifremer.fr

Arne Bjørge
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 Bergen
Norway
Tel: +47 55 238500
Fax: +47 55 238531
E-mail: arne.bjorge@imr.no

Jesper Boje
Greenland Institute for
Natural Resources
c/o Greenland Home Rule
P.O. Box 2151
DK-1016 Copenhagen K
Denmark
Tel: +45 33 693 460
Fax: +45 33 693 406
E-mail: jesper.boje@inet.uni2.dk

Peter Boyle
University of Aberdeen
Tillydrone Avenue
Aberdeen AB9 2TN
United Kingdom
Tel: +44 1 224 272 865
Fax: +44 1 224 272 396
E-mail: p.r.boyle@abdn.ac.uk

Anthony Calabrese
Milford Laboratory
NEFC/NMFS
212 Rogers Avenue
Milford, CT 06460
USA
Tel: +1 203 579 7040
Fax: +1 203 579 7017
E-mail: acalabre@clam.mi.nmfs.gov

John Castell
Dept. of Fisheries & Oceans
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, NS B2Y 4A2
Canada
Tel: +1 506 529 5904
Fax: +1 250 529 5862
E-mail: castellj@mar.dfo-mpo.gc.ca

Franciscus Colijn
FTZ Westküste
Hafentörn
25761 Büsum
Germany
Tel: +49 4834 604 200
Fax: +49 4834 604 299
E-mail: colijn@ftz-west.uni-kiel.de

J. Cotter
CEFAS
Lowestoft Laboratory
Lowestoft
Suffolk NR33 0HT
United Kingdom
Tel: +44 1502 562244
Fax: +44 1502 513865
E-mail: a.j.cotter@cefasc.co.uk

Ian M. Davies
Fisheries Research Services
Marine Laboratory
P.O. Box 101, Victoria Road
Aberdeen AB11 9DB
United Kingdom
Tel: +44 1224 876544
Fax: +44 1224 295511
E-mail: davesim@marlab.ac.uk

Hans Dahlin
SMHI
S-601 76 Norrköping
Sweden
E-mail: hdahlin@smhi.se

Poul Degnbol
Danish Institute for
Fishery Research
P.O. Box 101
DK-9850 Hirtshals
Denmark
Tel: +45 9894 2855
Fax: +45 9894 4268
E-mail: pd@ifm.dk

W. Dekker
Netherlands Institute for
Fisheries Research
Haringkade 1
P.O. Box 68
NL-1970 AB IJmuiden
Netherlands
Tel: +31 255 564690/564646
Fax: +31 255 564644

Ken F. Drinkwater
Dept. of Fisheries & Oceans
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, NS B2Y 4A2
Canada
Tel: +1 902 426 2650
Fax: +1 902 426 6927
E-mail: drinkwaterk@mar.dfo-
mpo.gc.ca

R. Dufour
Fisheries & Oceans Canada
Institut Maurice-Lamontagne
850, route de la Mer
C.P. 1000, Mont-Joli
Québec G5H 3Z4
Canada
Tel: +1 418 775 0623
Fax: +1 418 775 0740
E-mail: dufourr@dfo-mpo.gc.ca

Lars Edler
SMHI
Doktorsgatan 9D
262 52 Ängelholm
Sweden
Tel: +46 431 80854
Fax: +46 431 83167
E-mail: lars.edler@smhi.se

Karel Essink
National Institute for Coastal and
Marine Management/RIKZ
P.O. Box 207
9750 AE Haren
Netherlands
Tel: +31 505331373
Fax: +31505340772
E-mail: k.essink@rikz.rws.
minvenw.nl

Paul Fernandes
Fisheries Research Services
Marine Laboratory
P.O. Box 101, Victoria Road
Aberdeen AB11 9DB
United Kingdom
Tel: +44 1224 876544
Fax: +44 1224 295511
E-mail: fernandespg@marlab.ac.uk

Ronald Fonteyne
CLO Sea Fisheries Department
Ankerstraat 1
B-8400 Ostende
Belgium
Tel: +32 59 34 22 54
Fax: +32 59 33 06 29
E-mail: rfonteyne@unicall.be

C. Frid
University of Newcastle
Dove Marine Laboratory
Cullercoats
North Shields NE30 4PZ
United Kingdom
Tel: +44 1 91252 4850
Fax: +44 1 91252 1054
E-mail: c.l.j.frid@ncl.ac.uk

Kevin Friedland
NOAA, CMER Program
University of Massachusetts
Amherst, MA 01003
USA
Tel: +1 413 545 2842
Fax: +1 413 545 2304
E-mail:
friedlandk@forwild.umass.edu

K. G. Frøysa
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 Bergen
Norway
Tel: +47 55 238500
Fax: +47 55 238531
E-mail: kristin.froeysa@imr.no

Lars Føyn
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 Bergen
Norway
Tel: +47 55 238500
Fax: +47 55 238531
E-mail: lars@imr.no

R. D. Gelfeld
NOAA/World Data Center A
4th Floor,
1315 East West Highway
Silver Spring
MD 20910-3282
USA
Tel: +1 301 713 3295
Fax: +1 301 713 3303
E-mail: Robert.Gelfeld@noaa.gov

Stefan Gollasch
Bahrenfelder Strasse 73A
D-22765 Hamburg
Germany
E-mail: sgollasch@aol.com

A. Gudmundsdóttir
Marine Research Institute
P.O. Box 1390, Skúlagata 4
IS-121 Reykjavík
Iceland
Tel: +354 552 0240
Fax: +354 562 3790
E-mail: asta@hafro.is

Cornelius Hammer
Bundesforschungsanstalt f. Fischerei
Institut für Seefischerei
Palmaille 9
D-22767 Hamburg
Germany
Tel: +49 4038 905232
Fax: +49 4038 905263
E-mail: hammer.ish@bfa-fisch.de

Tore Haug
Norwegian Institute of Fisheries
and Aquaculture Ltd.
(Fiskeriforskning)
University Campus
N-9005 Tromsø
Norway
Tel: +47 776 29220
Fax: +47 776 29100
E-mail: toreh@fiskforsk.norut.no

Henk J. L. Heessen
Netherlands Institute for Fisheries
Research
Haringkade 1, P.O. Box 68
NL-1970 AB IJmuiden
Netherlands
E-mail: henkh@rivo.dlo.nl

Jens Chr. Holst
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 Bergen
Norway
Tel: +47 55 238500
Fax: +47 55 238531
E-mail: jens.christian.holst@imr.no

Gerd Hubold
Bundesforschungsanstalt f. Fischerei
Institut für Seefischerei
Palmaille 9
D-22767 Hamburg
Germany
E-mail: hubold.ish@bfa-fisch.de

K. Hylland
Norwegian Inst. for
Water Research
P.O. Box 69, Korsvoll
N-0818 Oslo 8
Norway
Tel: +47 221 85170
Fax: +47 221 85200
E-mail: ketil.hylland@niva.no

Eric Jagtman
RIKZ
P.O. Box 20907
NL-2500 EX s'Gravenhage
Netherlands
Tel: +31 70 3114 217
Fax: +31 70 3114 330
E-mail:
e.jagtman@rikz.rws.minvenw.nl

Tore Jakobsen
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 Bergen, Norway
Tel: +47 55 238500
Fax: +47 55 238531
E-mail: torej@imr.no

Paul Keizer
Dept. of Fisheries & Oceans
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, NS B2Y 4A2, Canada
Tel: +1 902 4266 138
Fax: +1 902 4266 695
E-mail: keizerp@mar.dfo-mpo.gc.ca

Kaisa Kononen
Maj and Tor Nessling Foundation
Pohj. Hesperiankatu 3 A 4
FIN-00260 Helsinki, Finland
Tel: +358-9-43425511
Fax: +358-9-43425555
E-mail: kaisa.kononen@nessling.fi

G. Kornilovs
Latvian Fisheries Research Institute
Daugavgrivas Street 8
LV-1007 Riga, Latvia
Tel: +371 2 613 775
Fax: +371 2 616 946
E-mail: georgs_k@latfri.lv

Robin Law
CEFAS, Burham-on-Crouch Lab.
Remembrance Avenue
Burnham-on-Crouch,
Essex CM0 8HA, United Kingdom
E-mail: r.j.law@cefass.co.uk

Tomasz Linkowski
Sea Fisheries Institute
ul. Kollataja 1
PL-81-332 Gdynia
Poland
Tel: +48 58 621 68 30
Fax: +48 58 620 28 31
E-mail: tlink@mir.gdynia.pl

George Martin
Estonian Marine Institute
Marine Biology
Marja 4D
EE-10617 Tallinn, Estonia
Tel: +372 6112 934
Fax: +372 6112 934
E-mail: georg@klab.envir.ee

Jacques Massé
IFREMER, Fisheries Resources
Rue de l'Ile d'Yeu, B.P. 21105
F-44311 Nantes Cedex 03, France
Tel: +33 240 374 169
Fax: +33 240 374 075
E-mail: jacques.masse@ifremer.fr

Alain Maucorps
6, rue de Candé
F-44800 Saint Herblain
France
E-mail: alain.maucorps@freesurf.fr

S. Mehl
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 Bergen, Norway
Tel: +47 55 238500
Fax: +47 55 238531
E-mail: sigbjorn.mehl@imr.no

Stig Møllergaard
Danish Institute for Fisheries
Research, Fish Disease Laboratory,
Stigbøjlen 4
DK-1870 Frederiksberg C, Denmark
Tel: +45 35 35 2767
Fax: +45 35 28 27 11
E-mail: sme@dfu.min.dk

D. K. Mills
CEFAS, Lowestoft Laboratory
Lowestoft,
Suffolk NR33 0HT, United Kingdom
Tel: +44 1502 524253,
Fax: +44 1502 513865
E-mail: d.k.mills@cefass.co.uk

Ole Arve Misund
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 Bergen, Norway
Tel: +47 55 238500
Fax: +47 55 238531
E-mail: ole.misund@imr.no

Kai Myrberg
Institute of Marine Research
P.O. Box 33
FI-00931 Helsinki, Finland
Tel: +358 9 613 941
Fax: +358 9 613 94 497
E-mail: kai.myrberg@fimr.fi

Michael Møller Hansen
Danish Institute for Fisheries Res.
Department of Inland Fisheries
Vejlsovej 39, DK-8600 Silkeborg
Denmark
Tel: +45 8921 3145
Fax: +45 8921 3150
E-mail: mmh@dfu.min.dk

Hiltrun Müller
Bundesforschungsanstalt für
Fischerei
Institut für Ostseefischerei
An der Jägerbäk 2
D-18069 Rostock, Germany
Tel: +49 381 810 249
Fax: +49 381 810 445
E-mail: ernst.ior@t.online.de

A. Newton
Fisheries Research Services
Marine Laboratory, P.O. Box 101,
Victoria Road, Aberdeen AB11 9DB,
United Kingdom
Tel: +44 1224 876544
Fax: +44 1224 295511
E-mail: newtonaw@marlab.ac.uk

T. T. Noji
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 Bergen, Norway
Tel: +47 55 238500
Fax: +47 55 238531
E-mail: Thomas.Noji@imr.no

Carl O'Brien
CEFAS, Lowestoft Laboratory
Lowestoft, Suffolk NR33 0HT
United Kingdom
Tel: +44 1502 524 256
Fax: +44 1502 513 865
E-mail: c.m.obrien@cefass.co.uk

Evald Ojaveer
Estonian Marine Institute
Viljandi Rd. 18B
112 16 Tallinn
Estonia
Tel: +372 628 1568
Fax: +372 628 1563
E-mail: e.ojaveer@ness.sea.ee

Niall O'Maoileidigh
The Marine Institute
Fisheries Research Centre
Abbotstown
Dublin 15, Ireland
Tel: +353 182 10111
Fax: +353 1 820 5078
E-mail: niall.omaileidigh@marine.ie

Thomas R. Osborn
Dept. of Earth and Planetary Sciences
Johns Hopkins University
Baltimore, MD 21218, USA
Tel: +1 410 516 7519
Fax: +1 410 516 7933
E-mail: osborn@jhu.edu

Tapani Pakarinen
Finnish Game and Fish. Res. Institute
P.O. Box 6
FI-00721 Helsinki
Finland
Tel: +358 205 751 224
Fax: +358 205 751 201
E-mail: tapani.pakarinen@rktl.fi

Martin Pastoors
Netherlands Institute for Fisheries
Research
Haringkade 1, P.O. Box 68
NL-1970 AB IJmuiden, Netherlands
Tel: +31 255 564690 / 564646
Fax: +31 255 564644
E-mail: martin@rivo.wag-ur.nl

E. Lysiak-Pastuszek
Institute of Meteorology & Water
Management
Waszyngtona 42
PL-81-342 Gdynia, Poland

Ken Patterson
Fisheries Research Services
Marine Laboratory
P.O. Box 101, Victoria Road
Aberdeen AB11 9DB
United Kingdom
Tel: +44 1224 876 544
Fax: +44 1224 295511
E-mail: K.R.Patterson@marlab.ac.uk

Mike Pawson
CEFAS
Lowestoft Laboratory
Lowestoft, Suffolk NR33 0HT
United Kingdom
Tel: +44 1502 562244
Fax: +44 1502 513865
E-mail: m.g.pawson@cefass.co.uk

P. Pepin
Dept. of Fisheries & Oceans
P.O. Box 5667
St John's, Nfld A1C 5X1
Canada
Tel: +1 709 772 2081
Fax: +1 709 772 4188
E-mail: pepin@athena.nwafc.nf.ca

G. Pierce
Dept. of Zoology, University of
Aberdeen, Tillydrone Avenue,
Aberdeen AB9 2TN,
United Kingdom
Tel: +44 1 224 272 459
Fax: +44 1 224 272 396
E-mail: g.j.pierce@aberdeen.ac.uk

G. Piet
Netherlands Institute for
Fisheries Research
Haringkade 1, P.O. Box 68
NL-1970 AB IJmuiden, Netherlands
Tel: +31 255 564690/564646
Fax: +31 255 564644
E-mail: g.j.piet@rivo.dlo.nl

Maris Plikshs
Latvian Fisheries Research Institute
Daugavgrivas Street 8
LV-1007 Riga
Latvia
Tel: +371 245 8731
Fax: +371 761 6946
E-mail: maris@latfri.lv

John G. Pope
NRC (Europe) Ltd
The Old Rectory,
Burgh St Peter
Norfolk NR34 0BT
United Kingdom
E-mail: popejg@aol.com

F. Redant
Ministry of Small Enterprises and
Agriculture, DG6 Research and
Development, CLO - Sea Fisheries
Department, Ankerstraat 1
8400 Ostende, Belgium
Tel: + 32 59 34 22 61
Fax: +32 59 33 06 29
E-mail: fredant@mail.dma.be

H. L. Rees
CEFAS
Burham-on-Crouch Laboratory
Remembrance Avenue
Burnham-on-Crouch
Essex CM0 8HA,
United Kingdom
E-mail: h.l.rees@cefass.co.uk

D. G. Reid
Fisheries Research Services
Marine Laboratory, P.O. Box 101,
Victoria Road, Aberdeen AB11 9DB
United Kingdom
Tel: +44 1224 876544
Fax: +44 1224 295511
E-mail: reiddg@marlab.ac.uk

Jake C. Rice
Atlantic Stock Assessment Secretariat
Fisheries Research Branch - DFO
200, Kent Street, Station 1256
Ottawa, ONT K1A 0E6, Canada
Tel: +1 613 990 0288
Fax: +1 613 954 0807
E-mail: ricej@dfo-mpo.gc.ca

S. M. Rowlatt
CEFAS
Burham-on-Crouch Laboratory
Remembrance Avenue
Burnham-on-Crouch,
Essex CM0 8HA
United Kingdom
E-mail: s.m.rowlatt@cefass.co.uk

Jonathan Side
ICIT Heriot-Watt University
Old Academy, Back Road
Stromness, Orkney KW16 3AW
United Kingdom
Tel: +44 1 856 850 605
Fax: +44 1 856 851 349
E-mail: ioejcs@icit.civ.hw.ac.uk

Y. Simard
Fisheries & Oceans Canada
Institut Maurice-Lamontagne
850, route de la Mer,
C.P. 1000, Mont-Joli
Québec G5H 3Z4, Canada
Tel : +1 418 775 0527
Fax : +1 418 775 0542
E-mail: simardy@dfo-mpo.gc.ca

E. J. Simmonds
Fisheries Research Services
Marine Laboratory
P.O. Box 101, Victoria Road
Aberdeen AB11 9DB,
United Kingdom
Tel: +44 1224 876544
Fax: +44 1224 295511
E-mail: simmondsej@marlab.ac.uk

Bengt Sjöstrand
Institute of Marine Research
Box 4
S-453 21 Lysekil
Sweden
Tel: +46 523 18708
Fax: +46 523 13977
E-mail: bengt.sjostrand@fiskeriverket.se

Dankert Skagen
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 Bergen
Norway
Tel: +47 55 238 419
Fax: +47 55 238 555
E-mail: dankert.skagen@imr.no

Hein Rune Skjoldal
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 Bergen
Norway
Tel: +47 55 238500
Fax: +47 55 238531
E-mail: hein.rune.skjoldal@imr.no

D. Somerton
Alaska Fisheries Science Center
NMFS/NOAA
7600 Sand Point Way N.E.
Seattle, WA 98115-0070
USA
Tel: +1 206 526 4116
Fax: +1 206 526 6723
E-mail: david.somerton@noaa.gov

Y. Stratoudakis
IPIMAR
Avenida de Brasilia
P-1400 Lisbon
Portugal

Robert L. Stephenson
Dept. of Fisheries & Oceans
Biological Station,
St Andrews, NB E0G 2X0
Canada
Tel: +1 506 529 3108
Fax: +1 506 529 5862
E-mail: stephensonr@mar.dfo-mpo.gc.ca

Jon G. Sutinen
University of Rhode Island
Environmental & Natural Resource
Economics, 306 Lippitt Hall
Kingston, RI 02881,
Tel: +1 401 874 4586
Fax: +1 401 782 4766
E-mail: jsutinen@uri.edu

Mark Tasker
JNCC
Dunnet House
7, Thistle Place
Aberdeen AB10 1UZ
United Kingdom
Tel: +44 1 224 655 701
Fax: +44 1 224 621 488
E-mail: tasker_m@jncc.gov.uk

Axel Temming
Institut für Hydrobiologie und
Fischereiwissenschaft
Olbersweg 24
D-22767 Hamburg
Germany
Tel: +49 40 428 386 620
Fax: +49 40 428 386 618
E-mail: atemming@rrz.uni-hamburg.de

William Turrell
Fisheries Research Services
Marine Laboratory
P.O. Box 101
Victoria Road
Aberdeen AB11 9DB
United Kingdom
Tel: +44 1224 876544
Fax: +44 1224 295511
E-mail: turrellb@marlab.ac.uk

Steffen Uhlig
Inst. für Statistik und Ökonomie
Freie Universität. Berlin
Garystrasse 21
14195 Berlin
Germany
E-mail: uhlig@wiwiss.fu-berlin.de

Luis Valdés
Instituto Español de Oceanografía
Laboratorio de Santander
Apdo 240,
E-39080 Santander
Spain
Tel: +34 942 291060
Fax: +34 942 275072
E-mail: luis.valdes@st.ieo.es

Yvonne Walther
Baltic Sea Research Station
Utövägen 5
37137 Karlskrona
Sweden
Tel: +46 455 14230
Fax: +46 455 10484
E-mail: yvonne.walther@fiskeriverket.se

INTERNATIONAL ORGANISATIONS HAVING 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-Fisheries)
 - 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 Science Foundation
 - 18.1 European Marine and Polar Science (EMaPS) Boards
- 19 Fisheries Society of the British Isles
- 20 Global International Water Assessment (GIWA)
- 21 Institute for Fisheries Research and Development (INIDEP) (Argentina)
- 22 Institute of Marine Biology of Crete (Greece)
- 23 Instituto de Fomento Pesquero (IFOP) (Chile)
- 24 International Arctic Science Committee (IASC)
- 25 International Association for Biological Oceanography (IABO)
- 26 International Baltic Sea Fishery Commission (IBSFC)
- 27 International Center for Living Aquatic Resource Management (ICLARM)
- 28 International Commission for the Conservation of Atlantic Tunas (ICCAT)
- 29 International Council of Scientific Unions (ICSU)
- 30 International Institute of Fisheries Economics & Trade (IIFET)
- 31 International Maritime Organization (IMO)
 - 31.1 London Convention on Dumping
- 32 International Pacific Halibut Commission (IPHC)
- 33 International Union for the Conservation of Nature and Natural Resources (IUCN)

- 34 International Whaling Commission (IWC)
- 35 National Institute of Water and Atmospheric Research (NIWA) (New Zealand)
- 36 Nordic Council of Ministers
- 37 North Atlantic Marine Mammal Commission (NAMMCO)
- 38 North Atlantic Salmon Conservation Organization (NASCO)
- 39 North-East Atlantic Fisheries Commission (NEAFC)
- 40 North Pacific Anadromous Fish Commission (NPAFC)
- 41 North Pacific Marine Science Organization (PICES)
- 42 Northwest Atlantic Fisheries Organization (NAFO)
- 43 Organization for Economic Cooperation and Development (OECD)
- 44 Oslo and Paris Commissions (OSPAR)
- 45 Scientific Committee on Oceanic Research (SCOR)
- 46 Sea Fisheries Research Institute (South Africa)
- 47 Statistical Office of the European Communities (EUROSTAT)
- 48 United Nations Educational, Scientific and Cultural Organization (UNESCO)
 - 48.1 Intergovernmental Oceanographic Commission (IOC)
- 49 United Nations Environment Programme (UNEP)
- 50 United Nations Food and Agriculture Organization (FAO)
 - Fisheries Department
- 51 World Wide Fund for Nature (WWF)

ACRONYMS APPEARING IN ICES ANNUAL REPORT

Abbreviation	Title
ACE	Advisory Committee on Ecosystems
ACFM	Advisory Committee on Fishery Management
ACIA	Arctic Climate Impact Assessment
ACME	Advisory Committee on the Marine Environment
ADCP	Acoustic Doppler Current Profiler
ADP	Automatic Data Processing
AMAP	Arctic Monitoring and Assessment Programme
AOSB	Arctic Ocean Science Board
APPEAL	Academic Press Print and Electronic Access Licence
ASC	ICES Annual Science Conference
ASMO	Environmental Assessment and Monitoring Committee (OSPAR)
BCC	Baltic Committee
BITS	Baltic Survey Database
BMB	Baltic Marine Biologists
BWG	Bureau Working Group
BWG100	Bureau Working Group on Planning for the ICES Centenary
BWGADV	Bureau Working Group on the ICES Advisory Process
CBO	Committee of Baltic Oceanographers
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CEFAS	The Centre for Environment, Fisheries & Aquaculture Science (UK)
CGADV	Coordinating Group on ICES Advice
CIEM	Conseil International pour l'Exploration de la Mer (ICES)
CIESM	Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée
CM	ICES Council Meeting
CoastBASE	European Virtual Coastal and Marine Data Warehouse (EU Project)
COML	Census of Marine Life
CONC	Consultative Committee
CONSSO	Committee of North Sea Senior Officials
CORE	Consortium for Oceanographic Research and Education
CPUE	Catch Per Unit Effort
CRR	ICES Cooperative Research Report
CSIRO	Commonwealth Scientific and Industrial Research Organization (Australia)
CTD	Conductivity, Temperature and Depth
CWP	Coordinating Working Party on Fishery Statistics
DDT	Dichlorodiphenyltrichloroethanes
DEL	Delegate
DFO	Department of Fisheries and Oceans, Canada
DG	Directorate-General
DIFRES	Danish Institute for Fisheries Research
DKK	Danish Kroner
EAS	European Aquaculture Society
EC	European Commission
EC-MON	Working Group on Monitoring and Assessment
ECOPATH	Ecosystem model
EDMAR	UK Project on Endocrine-Disruption Contaminants
EDP	Electronic Data Processing
EEA	European Environment Agency
EIFAC	European Inland Fisheries Advisory Commission
EMaPS	European Marine and Polar Science Committee
EMAS	Eco-Management and Audit Scheme (EU)
EMS	Early Mortality Syndrome
EROD	ethoxyresorufin-O-deethylase
ESOP	European Subpolar Ocean Programme
ETC/MCE	European Topic Centre on Marine and Coastal Environment
EU	European Union
EUNIS	European Nature Information System

EurOCEAN 2000	European Conference on Marine Science and Ocean Technology
EUROSTAT	Statistical Office of the European Communities
FAO	Food and Agriculture Organization (UN)
FTC	Fisheries Technology Committee
GAM	Generalised additive models
GBP	British pound (i.e. £ sterling)
GEF	Global Environment Facility
GIS	Geographic Information Systems
GIWA	Global International Waters Assessment
GLM	Generalised linear models
GLOBEC	Global Ocean Ecosystem Dynamics Programme
GOOS	Global Ocean Observing System
HAC	Hydro Acoustic
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
ICZP/M	Integrated Coastal Zone Planning and Management
IDEAL	International Digital Electronic Access Library
IFOP	Instituto de Fomento Pesquero
IFREMER	Institut Français de Recherche pour l'Exploitation de la Mer (France)
IGBP	International Geosphere - Biosphere Programme
IIFET	International Institute of Fisheries Economics & Trade
IMO	International Maritime Organization
IMR	Institute of Marine Research
INIDEP	Instituto Nacional de Investigación y Desarrollo Pesquero (Argentina)
INPUT	Working Group on Inputs to the Marine Environment
IOC	Intergovernmental Oceanographic Commission
IPHC	International Pacific Halibut Commission
IPIMAR	Instituto Português de Investigação Marítima (Portugal)
IRF	Inter-Regional Forum
IWC	International Whaling Commission
JMS	<i>ICES Journal of Marine Science</i>
KPMG	KPMG C. Jespersen, State Authorized Public Accountants
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
MONAS	Meeting of the Monitoring and Assessment Working Group
MoU	Memorandum of Understanding
MSS	ICES Marine Science Symposia
NAFO	Northwest Atlantic Fisheries Organization
NAMMCO	North Atlantic Marine Mammal Commission
NAO	North Atlantic Oscillations
NASCO	North Atlantic Salmon Conservation Organization
NEAFC	North-East Atlantic Fisheries Commission
NINA	Norwegian Institute for Nature Management
NIWA	National Institute of Water and Atmospheric Research
NMFS	National Marine Fisheries Service (USA)
NOAA	National Oceanic and Atmospheric Administration (USA)
NPAFC	North Pacific Anadromous Fish Commission
NSF	National Science Foundation
NSTF	North Sea Task Force
NW	Northwestern
OCC	Oceanography Committee

OECD	Organization for Economic Cooperation and Development
ONR	Office of Naval Research
OPC	Optical plankton counter
OSLR	Ocean Science in Relation to Living Marine Resources.
OSPAR	Oslo and Paris Commissions
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PELASSES	Pelagic Acoustic Surveys in Sub-Areas
PICES	North Pacific Marine Science Organization
PINRO	Polar Research Institute of Marine Fisheries and Oceanography (Russia)
QA	Quality Assurance
QSR	Quality Status Report
QUASIMEME	Quality Assurance of Information for Marine Environmental Monitoring in Europe
RIKZ	Rijksinstituut voor Kust en Zee (the Netherlands)
RMC	Resource Management Committee
RN-DNA	Ribonucleic acid-deoxyribonucleic acid
ROSCOP	Cruise Summary Report
SAMFISH	Improved sampling of North East Atlantic Fisheries, EU Study Contract 99-009
SCOR	Scientific Committee on Oceanic Research
SIME	Working Group on Concentrations, Trends, and Effects of Substances in the Marine Environment
SMHI	Swedish Meteorological and Hydrological Institute
SOAEFD	Scottish Office Agriculture, Environment and Fisheries Department
STEREO	Stock Effects on Recruitment Relationships
SW	Southwest
TAC	Total Allowable Catch
TBT	Tributyltin
TCPMe	Tris(4-chlorophenyl)methane
TIE	Toxicity Identification and Evaluation
TIMES	<i>ICES Techniques in Marine Environmental Sciences</i>
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
WAS	World Aquaculture Society
WG	Working Group
WGCOOP	ICES/Commissions Working Group on Cooperative Procedures
WMO	World Meteorological Organization
WWF	World Wide Fund for Nature
WWW	World Wide Web
XBT/XCTD	Expendable Bathythermographu/Conductivity-Temperature-Depth Recorder