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ICES ANNUAL REPORT 1993

Procès-Verbal de la Réunion 1993

81st Statutory Meeting

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DUBLIN, IRELAND, 23 SEPTEMBER - 1 OCTOBER 1993

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Dublin, 23 September - 1 October 1993

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GENERAL ASSEMBLY

Dublin Castle, Dublin
Thursday, 23 September 1993

The **President, Mr David de G. Griffith**, opened the General Assembly of the 81st Statutory Meeting at 09.00 hrs:

"A Aire, agus, a dhaoine uaisle.

Céad mile fáilte rómhaibh go léir go dti an tOctó hAonú Cruinniu Reachtúil don Comhairle Idirnáisiunta do Taischealadh na Mara. Go háiraithe, cuirimid fáilte romhaibh go hÉirin agus Baile Átha Cliath, cathair a rugadh in aois na Lochlannaigh, agus oiliunaithe leis na Normánaigh, cathair a bhain clú agus cáil i rith na céadta a leanas de réir a chunamhai don cultúir litheartha.

Minister, Ladies, and Gentlemen.

Welcome to the 81st Statutory Meeting of the International Council for the Exploration of the Sea. Welcome also to Ireland and to Dublin, a city born in the Viking age and nurtured by the Normans, a city noted throughout the following centuries for its contributions to literary culture. It is also a city whose cosmopolitan nature - both in the material fabric of Dublin as well as in the colourful imagery of our speech - bears evident witness to the many cultural strands running through our history, from the time of the Viking King Sitric Silkbeard - Sigtryggr Silkeskæggi, and of the Norman leader Richard FitzGilbert de Clare, also known as Strongbow, whose tomb you may see in the Cathedral of Christ Church, a short distance from Dublin Castle where we are seated. A hundred thousand welcomes to you all.

Minister, it is my honour to invite you to address the ICES General Assembly."

Mr David Andrews, T.D., Minister for Defence and the Marine, gave the following address:

"Ladies and Gentlemen.

It is a pleasure for me to be here today in the historic surroundings of Dublin Castle to open the 81st Statutory Meeting of the International Council for the Exploration of the Sea and to welcome the delegates to Ireland.

ICES is the world's oldest intergovernmental science organization. It was established in 1902 and has gained a considerable international reputation over the years. Its work is focused on living marine resources in the Atlantic Ocean and its adjacent seas, including the North Atlantic and the Baltic Sea. The importance of ICES increases each year as pressure on fish stocks increases. This is reflected in the increased demand for scientific advice from ICES from various international bodies. These include the North Sea Task Force, the Oslo and Paris Commissions, and the Commission of the European Communities, to name but a few.

It is good to see also that the work of ICES has adopted a multi-disciplinary approach to management advice because of the need to maintain viable fisheries and at the same time sustain important ecosystems. An example of this is the newly formed Advisory Committee on the Marine Environment which aims to understand the influence of human activities on the marine environment. I understand that substantial reorganization has taken place within ICES and discussions on further changes are ongoing.

Ireland has been a member of ICES since 1925. During this time, we have been honoured to have had two elected Presidents in this prestigious organization. The annual Statutory Meeting was first held in Ireland in 1969 during the presidency of the late Dr Arthur Went. At this moment your President is Mr David Griffith, Director of the Department of the Marine's Fisheries Research Centre and Chief Scientific Advisor.

Ireland is a country that cherishes its natural environment. We regard a pollution-free environment as one of our major advantages and it is something we try to guard vigorously. It is particularly important in the context of our geographical location at the edge of the Atlantic. On the other side, we have the Irish Sea, which raises a number of sensitive issues. Our policy is to balance the rational exploitation of our natural resources through good marine environment management.

It is a great privilege for Ireland to host this year's Statutory Meeting, and I would like to take this opportunity to welcome the delegates here today, not just to the conference, but to Dublin. I hope that during your stay here you will get the opportunity to sample some of the famous Irish hospitality, and you will have your first taste of it at this evening's reception for delegates.

It only remains for me to declare the Statutory Meeting open and to wish you well in your deliberations."

The **President** thanked Mr Andrews for his kind words and presented him with a copy of the recently published "Atlas of North Sea Fishes". He then continued:

"It is now my sad duty to inform you of the deaths of four friends and colleagues during the past year.

David Piggins died on 18 December 1992 at the comparatively early age of 65. As a young biologist, he joined the Yorkshire and Ouse River Board where he was assigned to pollution control, and in 1967 he moved to the pristine waters of the Burrishoole River system in Co. Mayo in the west of Ireland as biologist to the newly founded Salmon Research Trust. Under his direction the Farran Research Laboratory was built up to become the model for studies on salmon and sea trout in the North Atlantic. The Farran Laboratory also pioneered fish farming in Ireland. David was a regular participant in ICES meetings from 1958 until his retirement in 1989, and he served as Chairman of the Anadromous and Catadromous Fish Committee from 1979 to 1982. He will be sadly missed by his friends and colleagues as well as by his immediate family - his wife Shirley, his daughters Felicity and Rachel, and his son Jonathan.

Else Hedegaard died on 4 February 1993 at the age of 83. She joined the Council in 1936, saw it though the war years, and retired as Administrative Secretary in 1976. I first met Else Hedegaard in 1969, the first occasion on which the ICES Statutory Meeting was held in Dublin. From that first meeting, and from my time on the ICES Secretariat when Else was one of my working colleagues in the 1970s, it is her sense of fun that comes immediately to mind. That, and the enormous number of people she knew throughout the ICES Member Countries, an enormous catalogue of friendship which had grown up around her during her 40 years on the ICES staff. She was an old friend who will be missed by many.

Helene Tambs-Lyche, the wife of Hans Tambs-Lyche who was General Secretary from 1965 to 1983, died suddenly in Copenhagen on 18 March 1993. She was an entomologist of international repute, and was a hospitable and friendly hostess to generations of ICES Delegates. I have good reason to remember the kindness and generosity shown to me by Helene and Hans during my time as Statistician on the ICES Secretariat. Hans continues to live in Copenhagen, with trips to Norway to look after family affairs.

Basil Parrish died on 28 June 1993 at age 71. He had a distinguished career in marine science, retiring as Director of the Aberdeen Marine Laboratory in 1982. A man who received several honours, including the appointment of Commander of the British Empire in 1978 and an honorary D.Sc from Aberdeen University in 1984, he brought honour to ICES - as General Secretary from 1983 to 1989, President from 1976 to 1979, Chairman of the Consultative Committee from 1967 to 1970, and Chairman of several standing Committees in the years before that. In an eloquent eulogy in the latest issue of the ICES newsletter, Ed Thomasson describes Basil's generosity of spirit and his unassuming nature, and I would like to read you that portion of the eulogy:

> *'I was late for a special lunch in the ICES lunch room honouring someone, I forget who now. The lunch room was crowded, and after I had placed my food on my plate I noticed that there was no seat available except at an empty table far away from the others. Having no alternative, I went over and sat down and began to eat by myself while the laughter and talking went on around me. There's nothing lonelier than sitting at a table by yourself in a room filled with people happily talking and eating. Minutes seemed like hours. That is, until I saw Basil look over at me, stop talking, get up from his chair, pick up his plate, leave the friendly crowd he was with, and walk the distance over to my table. "Well, Ed, how are things with you?" he said, sitting down beside me.*
>
> *We all probably have our stories about Basil and this is mine. You see, Basil was more than what we think of as being an English gentleman who got on in life, and that is why he will be remembered. We send our deepest condolences to his wife, Hilda, and their daughter, Janet.'*

Truly he also was a friend to many who have good reason to look back on the years of Basil's presence with fond memories.

I am glad to be able to tell you that Basil's wife, Hilda, is here as our guest. I am delighted that you are able to be here, Hilda, and I would like you to feel that the love and support of your many friends who enjoyed such hospitality from you and Basil in your home in Copenhagen is here for you in abundant measure.

I would ask you all to stand for a few moments of silence in memory of our former friends and colleagues.

In my opening address last year, I spoke of the 1990s as being a decade of change, and how ICES must respond to these challenges in a constructive and flexible manner, as it has demonstrated throughout the 91 years of its existence as the premier international marine research organization. I told you that we had established a Strategic Working Group to examine possible developments over the next 10-20 years, and to draft a policy to take ICES into the next century.

I am glad to let you know that I have been able to keep my promise to circulate, as a working paper, the report of that Working Group. It has been included in the general conference documentation as Doc. Gen:6 - Report of the Bureau Working Group on Strategic Planning for Scientific Cooperation and Advice, and I encourage all participants to read it and to comment on it through the appropriate procedures of this conference.

The Consultative Committee, too, has been looking at the structures and procedures of ICES itself, and of the Statutory Meeting. The report of their mid-term meeting, Doc. Gen:4, also contains far-reaching proposals which each of you should study and on which you should express your considered opinion. We are very anxious that all proposals for improvements should be fully evaluated through informed comment and open debate, in order to ensure that real advances can be achieved. I am particularly concerned that urgent action be taken to ensure that the Statutory Meeting does not become totally submerged by the papers submitted - a total of 613 this year, which is a 40% increase on 1992. In the 1970s and 1980s, the Council considered the possibility of limiting, in some say, the number of papers, but decided against it on the grounds that younger scientists needed the opportunity afforded by the Statutory Meeting to obtain peer review of work in progress. Is that still true today? Are there more openings now, by way of symposia and a wide range of scientific journals, to give realization to this vital and laudable objective? We want to hear your opinions, particularly those of the younger scientists, so please, over the next few days, read and complete the questionnaire which you will find, printed on green paper, along with the general conference documentation, in your pigeon hole. Please return your questionnaire to the Reception Desk when you have had an opportunity to form an opinion on which to base your response.

Returning to the immediate future, I would like to draw your attention to anticipated personnel changes in the ICES Secretariat. Our General Secretary, Emory Anderson, will be returning permanently to the United States in a few months. Following advertisements of this vacancy in the scientific press, we shortlisted seven candidates for interview from a field of 30 applicants. Following a rigorous selection procedure at the end of August, the Bureau has drafted its advice to the Delegates, who will make the appointment during the coming days. I will see that you are informed of the appointment as soon as practicable.

Emory Anderson has been General Secretary of ICES since 1989, having joined the Secretariat as Statistician in 1985. His period in office has been notable as one of innovation and imaginative response to external and internal changes. I am glad to have had his experience and counsel to call on in my capacity as President, and our warm good wishes go to him and his wife Geri on their return home.

Two retirements from the administrative staff at ICES Headquarters in Copenhagen will take place early in 1994. I mention them now because, for the two people concerned, Merete Hänschell and Sys Enevold, this will be the last Statutory Meeting at which we can enjoy their company, companionship, and unflagging help. Merete joined the staff of ICES as a charming young lady in 1954. Now, to paraphrase Basil Parrish's kind words about our old friend Else Hedegaard when she retired in 1976, Merete will be leaving us next March as a charming 40-years-older young lady.

Generations of Working Group members and Committee Chairmen will have occasion to be grateful for the adroit typing of their illegible scribbles by Merete and her staff, whereby these authors' ugly duckling manuscripts were transformed into the most radiant swans by a process of magic which disguised the hard and sustained slog of Merete's dedicated work. On behalf of all of us, it gives me very great pleasure to present Merete with this gift which comes with our love and best wishes."

The **President** presented Ms Hänschell with a bouquet of flowers and a beautiful pearl necklace, and the audience responded with a rousing applause. He then continued:

"Sys Enevold commenced work for ICES in 1960 when she came in to provide temporary assistance at the Statutory Meeting. This sterling service continued for some years until at last the Council got sense and recruited Sys to a permanent job in the Secretariat in 1984. For over 30 years she has continued to radiate good humour and constant support to staff and visitors alike, which seems to be a characteristic feature of the ICES ladies. Sys, too, will be sorely missed for her contribution to the unique atmosphere of work at ICES Headquarters, and I would like her to accept this gift from all of us with fondest regards."

The **President** presented Ms Enevold with a bouquet of flowers and an engraved silver platter, and the audience responded with a rousing applause. He then continued:

"Together with your many, many friends in ICES, I give both of you our very best wishes and the hope that we may share continued friendship for many years to come.

I should also mention that Karen Schrader, formerly Karen Elgaard, retired from her position as Administrative Secretary on 29 January 1993. The successor to Else Hedegaard in 1976, Karen's warm and friendly personality was enhanced - if that were possible - by her role as paymaster to visiting ICES scientists on the Advisory Committees and the Bureau, an element of her job which she carried out with a well-developed sense of humour and endless patience at the inability of some of us to get the sums right and the forms filled in correctly. We wish her well in her retirement, and welcome her successor, Jytte Andersen-Rosendal, who will be joining the Meeting tomorrow.

I now call on the Conveners of our two Symposia to give their summary reports. First, Prof. Harald Rosenthal on the Symposium on 'Mass Rearing of Juvenile Fish' which was held in Bergen, Norway in June."

Prof. Rosenthal reported as follows:

"The ICES Symposium on 'Mass Rearing of Juvenile Fish' was held in Bergen, Norway from 21-23 June. The initiative for the Symposium originated from the respective ICES Working Group which reports to the Mariculture Committee and started its work in 1986 as a Study Group.

As the mariculture industry expanded its activities to new candidate species such as turbot, sea bass, sea bream, and halibut, it was soon felt that there was a great need for expert advice on issues related to the mass cultivation of the sensitive juvenile stages of these fish. The Mariculture Committee recommended that a Symposium be arranged in order to attract additional international expertise from relevant bordering disciplines and to meet the growing demand of interdisciplinary approaches. Additionally, Working Group members would obtain an opportunity for extended exchange of information and further stimulating in-depth discussion of subjects of mutual interest.

The Symposium attracted about 120 participants from 25 countries. The Symposium was formally opened with an address of welcome and an invitation to fruitful discussion by the Director of the Institute of Marine Research in Bergen, Roald Vaage.

In an introductory note, H. Rosenthal (Germany) presented the concept of scale-dependent issues related to mass cultivation and the requirements of early life cycle stages of fish, entitled 'Micro to macro: is aquaculture research looking at the appropriate scale range?' This holistic approach highlighted the theme of the Symposium, which was the importance of prior history on the life stage being examined. It also pointed out that many studies influence one level of organization (the cell, tissue, or embryo) and measure the effect at a selected later stage of individual development (e.g., larva or juvenile), whereas the effects on the group or population of fishes are largely inferred. In aquaculture, where the natural history traits may be compromised by crowded yet controlled conditions, prior history will determine responses to a multitude of factors and, ultimately, production numbers.

The response of the participants to the Symposium topic indicated clearly that problems with the mass rearing of juvenile fish lay mainly at the larval or earlier stages, and hence the plethora of contributions regarding larval development. It is possible that the general knowledge of the industry may be somewhat abetted by improved understanding of the environmental and nutritional requirements of selected species at selected life stages. However, further advances can only be made through a fundamental understanding of the physiological and developmental processes involved, in particular those related to growth and protein accretion throughout the life cycle.

The Symposium was structured around four major session themes: 1) ***developmental and environmental interactions****, 2)* ***behavioural ecology****, 3)* ***nutrition****, and 4)* ***culture****.*

Eleven oral and ten poster presentations covered the fields of ***developmental and environmental interactions****. An invited review of principles of development (Osse, Netherlands) opened the session. The review presented not only structural development and processes, but also the need to closely link function and efficiency. Allometry was seen as the adaptive transition from the general homology of larval structures to the species-specific functionality of adult morphology. It was, therefore, suggested that studies of the functional correlates of allometric growth, such as respiratory surfaces and swimming ability, and the hydrodynamic regime may yield valuable information relevant to the design of rearing systems. It seems, therefore, advisable to study the functional correlates of general and specific parameters of allometry.*

Special attention was given to the development of larval sensory capability and the implications for the culture situations. The limitations of larval digestion and endocrine function were also addressed. In particular, the synchrony of the secretion of specific digestive enzymes and metamorphosis adds another dimension to the concept of weaning feed acceptance and assimilation of nutrients. The limited range of behavioural responses of larvae and environmental preference was also highlighted, emphasizing that culture conditions have to be designed according to the basic requirements of the larvae. Success will hardly be achieved if one expects larvae to adjust and/or adapt to the proffered technological system.

The session on ***behavioural ecology****, comprising four papers and ten posters, was introduced by the invited speaker, Bori Olla (USA). He gave a broad overview of the work on the behavioural ecology of pollack larvae in order to demonstrate our present understanding of recruitment processes. He also demonstrated convincingly the applicability of existing insights in this area to culture situations. The importance of various external stimuli for positive and negative phototaxis, thermotaxis, rheotaxis, and geotaxis was demonstrated, as was the hierarchy of different taxis in response to various stimuli. It was concluded that system design and operational procedures for mass culture must be planned with great*

care to avoid conditions which induce larvae to exhibit self-destructive behavioural patterns. In general, it was concluded that aspects of behavioural ecology deserve much more attention in future mass rearing trials.

Another contribution emphasized the application of behavioural ecology in culture situations while utilizing the evolutionary repertoire of behavioural responses to environmental pressures. This was exemplified by studies with lumpfish, cod, halibut, wolffish, and shortnosed sculpins, in particular determining prey and stocking densities. In one paper, the food intake and its relation to water turbidity resulting from high microalgae densities or inorganic particles was presented showing that for turbot there are optimal turbidity levels for a given illumination regime. The experimental results indicated that at least part of the reported beneficial effects of microalgae in 'green water' may relate to the improved near-point light conditions in culture tanks. And finally, a test system was presented which used the phototactic responses, including swimming distance, of the larvae as measures of quality and fitness.

The second day of the Symposium focused on the ***nutritional*** *requirements of first-feeding marine fish larvae. There were eleven oral and ten poster presentations covering a variety of aspects, but highlighting energy metabolism, condition, and the requirements of fatty and amino acids. D.F. Houlihan (UK) opened the session with a quantitative analysis of the amino acid flux in fish larvae and presented results which indicated that the proportion of synthesized protein relative to protein accretion in fish larvae is similar to values for larger fish. Therefore, estimates of larval protein synthesis rates can be calculated with the aid of considerations of scale, and estimates of protein synthesis incorporated into an amino acid flux model.*

The conflict between the widespread use of Artemia as first food, despite its paucity of free amino acids (FAAs) and the role of FAA as an osmolyte, a component of natural zooplankton, and a nutrient was discussed at length. The long-chain polyunsaturated fatty acids (PUFAs), vital ingredients in larval diets, were demonstrated to be important to the development of the visual system. The n-6/n-3 PUFA ratio was also debated. The need for standards in experimental procedures and reporting was acknowledged in several contributions and was the main topic of one presentation.

The Symposium's evening session highlighted aspects of muscle development in fish larvae, but participants also found time to further pursue the FAA/PUFA discussion. Methods for incorporating FAA in an enrichment mix or larval diet were left unresolved. Comparative studies using Artemia, rotifers, and inert feeds against a 'natural standard' (zooplankton) were also suggested in order to determine the potential of larval growth and performance.

The ***culture*** *session of the third day covered a wide range of subjects and species. The eight oral and eleven poster contributions ranged from Arctic fishes of the Murman coast to subtropical and tropical Mediterranean and Pacific species, but much time was devoted to the most commercially promising European culture candidates of turbot, halibut, sea bass, and sea bream.*

Session highlights included the review by P. Sorgeloos (Belgium) on the present status of larviculture. He emphasized that increased production of juveniles during the last decade was mainly due to a better understanding of the nutritional requirements of early life stages, and especially improved enrichment techniques for live food organisms such as Brachionus and Artemia. Important nutritional components for which dietary requirements have been identified included EPA, DHA, DHA/EPA ratios, phospholipids, pigments, vitamins, FAAs, and others. Nevertheless, a number of problems related to these components still need to be addressed, such as bacterial control in culture systems, disease control, and various zootechnical improvements related to feed quality and maintenance.

The importance of wild zooplankton as an additional nutrient source to avoid malpigmentation in halibut larvae was stressed, although wild zooplankton did not necessarily give better growth and survival than enriched Artemia. Further research is needed to determine at what age (stage) malpigmentation can be circumvented through a short-term supplement of natural zooplankton in the diet of halibut larvae. Prey items were also on the agenda when differences in S and L strains of Brachionus plicatilis, and the mass production of resting eggs were presented. The two strains can be separated by chromosomal tests. Further data on the role of microalgae showed a beneficial effect from some microalgae (Rhodomonas and Chlorella) on bacterial numbers and diversity of microflora in turbot tanks, as well as on the growth and survival of the larvae themselves. The importance of prey size and prey selection in turbot was also demonstrated, leading to the development of specific feeding regimes with small and large rotifers and mixed diets for given larval sizes. Finally, a report was presented on attempts to rear Dentex dentex, a new aquaculture candidate, in the Mediterranean area.

Contributions related to pathology and diseases focused on swimbladder problems and bacterial contamination in culture systems. Various pathological problems were observed in swimbladders of larval turbot, but inflation of the swimbladder did not seem to be a requisite for further development. One contribution reported that pathogen-inhibiting bacteria were associated with early life stages and larval development in halibut, when the

dominant pathogens are Vibrio sp. and Aeromonas sp. In some of the groups, the pathogen inhibitors were a major portion of the strains in the populations isolated from culture units. In this case, neutralism rather than actual bacterial number was an important factor.

Past programs and recent trends in mariculture in the former Soviet Union and Russia were also reported, concentrating on efforts related to stock enhancement and sea ranching. Broodstocks of plaice, long rough dab, cod, wolffish, and capelin are kept in the marine aquaculture station of the Murmansk Institute of Marine Biology, providing eggs for experiments in larval rearing. Special difficulties are met in these systems due to the low temperatures in high Arctic regions. Although plaice have been successfully reared to the age of three years, other species have succumbed to various problems within a few months of hatching.

During the Symposium and particularly during the evening session, a number of recommendations were discussed and drafted by session Chairmen, Steering Committee members, and by many participants. Because some of them are of relevance to scientists within the ICES area working in the field of mass rearing of juvenile marine fish, the recommendations are summarized under the following topics:

1) Growth/Energy Utilization/FAA/Protein Synthesis

Since maximization of individual growth is one important goal in mass rearing of fish larvae and juveniles, and since growth is generally achieved through protein accretion, it is recommended that research efforts be directed towards a better understanding and identification of the mechanisms of protein synthesis and particularly towards how these processes are regulated in the early life history stages of fish. The following questions are emphasized:

a) Will an increase in FAA levels spark protein synthesis, and which amino acid(s) are most efficient in this respect?

b) Is the net protein accretion in fish larvae a result of increased protein synthesis or of decreased protein degradation?

c) Is the plasma level of FAA related to feed intake and absorption in the intestine?

d) Is protein synthesis in fish larvae regulated by the cellular RNA level?

e) Are FAAs the regulators that control hunger and satiation in fish larvae, and, if so, which amino acid(s) are most efficient in this respect?

f) Can body levels of FAA in fish larvae be modified by ambient amino acid concentrations?

It is further recommended that a broad data base for FAA content in fish eggs be established, especially to document and understand differences between marine and freshwater fish, eggs with and without oil globules, pelagic and demersal eggs, and cold-water and warm-water species.

2) Measures of Nutritional Condition and Predictors of Growth

During the Symposium it was noted that the analytical procedures for biochemical methods used to determine quality and performance of larvae (such as the enzyme activity, RNA/DNA ratios, FAA, lipids, and C/N ratios) are very diverse and inconsistently employed. It is recommended that a) techniques used in laboratories of ICES Member Countries should be documented and compared and b) an attempt should be made to initiate an intercalibration exercise for analytical techniques presently used in ICES laboratories (this should be similar to the exercise for fatty acid analysis carried out by members of the respective ICES Working Group.

3) Terminology and Format of Reporting

It was felt by several participants that the current practice in reporting results from studies on early life stages does not easily lend itself to an adequate interpretation of the results and comparison of underlying processes. The reporting is often incomplete and the Materials and Methods section of publications is often too sparse to properly evaluate how the experiment was performed and how results compare with other studies. In light of the importance of prior history on the performance of the fish, it was felt that the inclusion of marginal details and more comprehensive experimental specifications were essential to evaluate the relevance of the results in relation to the hypothesis tested. It is recommended that guidelines for proper formats of reporting should be developed, as these will play a key role in avoiding future misinterpretation of the data, and in uncovering general trends.

4) Microflora in Culture Systems and Restrictive Use of Antimicrobials

Since most commercial hatcheries are tempted to combat diseases with excessive use of antimicrobial agents of various properties, and since treatment is often ineffective, it is recommended that studies are encouraged to better understand the role of bacterial microflora in larval culture systems. These studies should be directed towards the appropriate development of management tools, favouring prophylactic measures and probiotics rather than treatment. Such tools may include microal-

gal populations and selected microflora components which show pathogen-inhibitory properties as well as precise disinfection protocols.

5) 'Whole Organism' Approach

Many studies successfully demonstrated a cause-and-effect relationship between a dietary or environmental influence and the survival and growth of cultured fish larvae. However, further progress in aquaculture research may be limited if the mechanisms underlying these relationships are not properly defined. A 'whole organism' approach to the problem should be adopted, since the environment (in the widest sense) acts through the behaviour and physiology of the larvae to determine their growth and survival. Elucidation of these mechanisms will also enable us to understand how dietary and environmental factors interact. It is recommended that considerations of whole animal physiology and behaviour be incorporated into future studies on the effects of nutrition and environment.

6) Modelling Experimental Systems

In recent years, mathematical modelling has proved a fruitful approach to understanding behavioural and physiological mechanisms. Experience in this field could be applied to the much simpler culture environment. Simulated experiments would help identify combinations of factors likely to affect growth and survival. Comparison of model predictions with experimental results would refine our understanding of the above-mentioned mechanisms.

The Symposium was organized by a four-member international Steering Committee comprising I. Huse (Norway, Convener), H. Rosenthal (Germany), J. Verreth (Netherlands), and R. Batty (UK). Local arrangements were expertly managed by K. Pittman (University of Bergen), together with G. Dahle, K. Østervold Toft, A. Mangor-Jensen, K. Boxaspen (all from the Institute of Marine Research), and C. Welling (ICES). The proceedings of the Symposium will be published in a volume of the ICES Marine Science Symposia series. Financial support was given by the Norwegian Research Council, the Royal Ministry of Fisheries, and the Institute of Marine Research. On the first night of the Symposium, the City of Bergen invited the participants to a reception at the medieval 'Haakonshallen'. The last night of the Symposium coincided with the Norwegian midsummer night celebration, the Eve of Sankt Hans. The participants attended the celebrations at Sund on the very shores of the North Sea, with a seafood dinner, accordion and fiddle music, and an enormous bonfire blazing into the dusk of the northern summer night."

The **President** called on Mr Jakob Jakobsson to report on the Symposium on "Cod and Climate Change". **Mr Jakobsson** reported as follows:

"The Symposium on 'Cod and Climate Change' was held in Reykjavik during the period 23-27 August this year. As planned by the Steering Group, the Symposium covered a wide selection of subject areas which were, in one way or the other, connected with the species concerned, that is the cod. The Symposium opened with a session on historic review. This was followed by a session on the diagnosis of the causes of trends and fluctuations in cod stocks. We had sessions on North Atlantic circulation as well as on models of physical and biophysical processes. The biology of cod was discussed in detail as well as the position of the species in the various ecosystems. We devoted some time to experimental studies and to the genetics of cod stocks.

The Steering Group invited 21 authors to present papers, while an offer of 84 additional papers came, of which we could only take 37; of these, three were not presented. Thus, all together 55 papers were presented during the five-day Symposium, and in addition there were 32 posters presented. There were 222 participants, including 90 from the host country. The Symposium was conducted in nine consecutive sessions and as a result of the wide selection of subject areas, it provided an excellent forum for interdisciplinary participation and discussion. This was greatly appreciated by many participants. I think I can state with some justification that the discussion was usually lively and exceedingly constructive. During this discussion, it became very clear that heavy fishing pressure was the common denominator to practically all stocks, while climatic changes were affecting the stocks in a very different way. Thus, as an example, the lack of salinity and oxygen was the main environmental problem in the Baltic, while changes in wind field and low sea temperature were probably contributing to the collapse of the cod at Greenland. The observation was made that genetically the cod is a long-lived species with exceedingly high fecundity. These features may have greatly contributed to the historic success of the cod populations in fluctuating Arctic and sub-Arctic environments. The heavy fishing pressure that has been placed on most cod stocks during the second half of this century is changing the cod populations from long-lived to short-lived species. The possibility was discussed that this change would make the cod more vulnerable to changing environmental conditions.

The Symposium was held at a time of rapidly decreasing cod landings in the North Atlantic, and consequently most of the cod fisheries are going through severe difficulties, if not collapsing. The major exception is in the Barents Sea where appropriate management actions were taken a few years ago.

However, it became very clear how difficult it is to discern between man-made and natural fluctuations in populations which are as heavily fished as most of the North Atlantic cod stocks. Despite these difficulties, I think there was a very broad agreement among the participants that the Symposium was a worthy milestone in the understanding of the relationship between cod and climate.

The Steering Group is strongly recommending to the Council that the papers and the results of the Symposium should be published as soon as possible."

The **President** drew attention to Doc. C.M. 1993/Gen:1 which contained reports of Council participation at meetings of cooperating and other international organizations. He then called on the **General Secretary** who, after reviewing the arrangements for the Statutory Meeting and making a number of announcements, concluded with the following words:

"Since this will be my last meeting as General Secretary, I want to take this opportunity to express my thanks and those of my wife Geri for a most wonderful and exciting eight and a half years serving on the staff of the Secretariat, the first three and a half of which were spent as ICES Statistician. It was a tremendous honour for me to have had the privilege of working with and getting to know so many fine people: the staff of the Secretariat, the scientists and administrators in the Member Countries, and colleagues in other international organizations with whom ICES has working relationships. The memories of these years will be treasured for the rest of our lives. The past eight and a half years have witnessed many important changes and improvements in ICES, and I leave with a deep sense of personal satisfaction for having played a small role in some of them. ICES will continue to grow and evolve in the years to come. Having survived for 91 years, this one-of-a-kind organization will, I am confident, flourish for many more years because of its unique ability to transcend national political differences and because of that ever-present spirit that distinguishes ICES from most other organizations. This spirit has been passed down from one generation of scientists to the next and is the life blood of ICES. I wish the organization the best of success in the future, and I wish everyone a successful and profitable 1993 Statutory Meeting. Thank you."

The **President** welcomed Dr Judith McDowell Capuzzo (USA), who would present the Open Lecture on "Biological Effects of Contaminants", and introduced her as follows:

"Judith is a zoology graduate of the University of New Hampshire. Following a post-doctoral fellowship at the Woods Hole Oceanographic Institution, she was appointed as an assistant scientist there in 1976, an associate scientist in 1980, and was promoted to senior scientist in 1990. She is a member of numerous national and international committees and professional societies, and received the US Environmental Protection Agency's Environmental Merit Award in 1987. Judith McDowell Capuzzo is the USA member of the ICES Advisory Committee on the Marine Environment."

Dr Capuzzo presented a 45-minute illustrated lecture on the biological effects of contaminants on marine organisms and implications for monitoring population impacts. The paper on which her lecture was based will be published in the *ICES Journal of Marine Science.*

The **President** thanked Dr Capuzzo for her excellent lecture and adjourned the General Assembly at 11.00 hrs.

DOCUMENTS

Gen:1		Observers' reports from cooperating organizations
Gen:2		ICES activities in 1992/1993
Gen:3		Election of standing scientific Committee Chairmen at the 81st Statutory Meeting
Gen:4 Ref. A+Del		Report of mid-term meeting of Consultative Committee, ICES Headquarters, 14-16 June 1993
Gen:5		Advance release of Tables 1-6 of *ICES Fisheries Statistics*, Volume 77, 1992
Gen:6 Ref. A+Del		Report of the Bureau Working Group on Strategic Planning for Scientific Cooperation and Advice, Copenhagen, 17-20 June 1993
Gen:7	P. Mälkki	Session U - The ICES committee structure - discussion paper

CLOSING OF THE SCIENTIFIC SESSIONS

Dublin Castle, Dublin
Tuesday, 28 September 1993

The **President** opened the Closing of the Scientific Sessions at 12.35 hrs and commented briefly on several important matters:

"New prospectives in technology are reflected by the trend, in ICES, towards more interdisciplinary work - biologists, chemists, modellers, stock assessment specialists, and environmental scientists exchanging information and advice and working together in Joint Sessions at the annual Statutory Meeting as well as intersessionally.

At this Meeting, this trend has manifested itself most visibly in several of the Theme Sessions and Joint Sessions, for example, those on the 'Impact of the 1993 Major Inflow to the Baltic Sea', 'Effects of Oceanographic Factors on Survival and Distribution of Fish', and 'Computers in Fishery Research'. It is also reflected in one of the papers selected for one of our special awards, which you will be hearing about in a few minutes.

These developments are happening at a time of great change for ICES and are themselves essential components of the procedural and structural improvements which have been discussed during the past week. In order to respond to the widely articulated need for change, which was first expressed by the Council's elected officers and which has now been echoed by you, the 'field scientist' participants, we will be introducing as many of the proposals as we can at next year's Statutory Meeting in St. John's, Newfoundland. Later this week, I hope to set up a group which will review the way in which your ideas for structural changes with the Council itself can best be carried out. These changes, too, will be implemented as soon as practicable, but I want to ensure that they are fully though through beforehand in order to avoid the application of what Fred Serchuk, outgoing Chairman of ACFM, has referred to as 'The Law of Unintended Consequences'. You will definitely be hearing further from us."

The **General Secretary** made a number of closing announcements. Three new Chairmen had been elected for the following Committees: **Dr Colin Bannister** (UK), Consultative; **Dr Robert Cook** (Canada), Mariculture; and **Mr Maurice Héral** (France), Shellfish. Two new Vice-Presidents of the Council (and members of the Bureau) had been elected: **Dr Pentti Mälkki** (Finland) and **Mr David MacLennan** (UK). The Council was appreciative of and thankful for the services given by the outgoing Chairmen and Vice-Presidents. The number of registered participants at the Statutory Meeting had numbered about 500, which was a new record. Poster authors should remove their materials, and Committee Chairmen and Theme Session Conveners should submit their reports to the Secretariat as soon as possible. Lastly and on behalf of all participants, he conveyed sincere thanks to the staff of the Irish Fisheries Research Centre and the Dublin Conference Centre for the very fine arrangements and warm hospitality.

The **President** acknowledged, with thanks, the appreciation expressed to the Irish hosts and noted that Dr Emory Anderson would be stepping down in January as General Secretary and would be replaced by Prof. Chris Hopkins.

The **President** then called on the Chairman of the Consultative Committee to announce the winners of three prizes to be awarded.

The **Chairman of the Consultative Committee** announced the following prize winners and, together with the President, presented the certificates and gifts:

a) **Best Paper Presentation Award** to **Patrick Gentien** (France) for Doc. E:20 "New perspectives in coastal marine environment management due to new development in instrumentation", which he co-authored with Michel Lunven, with the **runners-up** being **Jutte Magnússon** and **Sveinn Sveinbjörnsson** (Iceland) for Doc. G:67 "Report on the O-Group Fish Survey in Iceland and East Greenland waters, Aug.-Sept. 1993";

b) **Best Poster Presentation Award** to **Marco van der Land** and **Henny Welleman** (Netherlands) for Doc. G:16 "'Bessy Turf' - a Mackintosh application for on-board registration of survey catches";

c) **Young Scientist Award** to **Marianne Giæver** (Norway), with **Graham Pierce** (UK) as the **runner-up**.

The **President**, on behalf of the Council, expressed special thanks to **Dr Emory Anderson**, the outgoing General Secretary, **Dr Fredric Serchuk**, the outgoing Chairman of ACFM, and **Prof. Chris Hopkins**, the outgoing Chairman of the Consultative Committee, for their outstanding contributions to the work of ICES. The audience expressed its appreciation with a standing ovation.

The **President** wished everyone a safe journey home and expressed the hope that he would see them at the 1994 Statutory Meeting in St. John's, Newfoundland. He then adjourned the scientific sessions at 13.05 hrs.

REPORT OF DELEGATES MEETING

Four sessions of the Delegates meeting were held under the chairmanship of Mr David de G. Griffith, President of ICES:

Thursday 23 September	11.30 - 13.00 hrs
Monday 27 September	14.30 - 18.45 hrs
Thursday 30 September	14.30 - 18.05 hrs
Friday 1 October	09.05 - 12.45 hrs

All Member Countries, except Portugal at the first session, were represented at all sessions, together with the Chairman of the Consultative Committee, General Secretary, and observers from Estonia. Other participants were the Environment Secretary at the first, third, and fourth sessions, and the Fishery Secretary, Oceanography Secretary, and newly elected Chairman of the Consultative Committee at the third and fourth sessions.

The **President** opened the first session of the Delegates meeting by announcing that Latvia had acceded to the ICES Convention and was, therefore, again a Member Country of the Council. He welcomed the two Latvian Delegates (Mr Normunds Riekstins and Mr Maris Vitinsh) and announced that a special ceremony would take place later in the day in the courtyard of Dublin Castle to raise the Latvian flag to its rightful place among the flags of the other Member Countries. He also welcomed Dr Robert Aps and Dr Evald Ojaveer as observers from Estonia, and a number of new Delegates whom he introduced individually (Dr Jan Henfling, Netherlands; Dr Tomasz Linkowski and Dr Andrzej Majewicz, Poland; and Mr David N. MacLennan, United Kingdom). [*At the second session, he welcomed Mr Marcel Chaussepied, France; and Dr John G. Shepherd, who served as Acting Delegate of the United Kingdom at that session in place of Dr David J. Garrod.*]

The **President** quickly reviewed the agenda and indicated the sessions during which he intended to consider each particular item. He also pointed out that he planned to consider Agenda Item 9 on "Strategic Planning for Scientific Cooperation and Advice" and Agenda Item 10 on "Progress in Enhancing the Interdisciplinary Role of ICES" together as a new Agenda Item 9 on "ICES in the Future". [*The subsequent agenda items are renumbered accordingly in this report.*]

Agenda Item 1 PRELIMINARY REPORT ON ADMINISTRATION

The **General Secretary** drew attention to Doc. C.M. 1993/Del:2 and in particular to the following points: a) several Member Countries were not up to date on the payment of their national contributions; b) changes in national Delegates and membership in ACFM and ACME; c) cooperation with other international organizations; d) Symposia either held during the past year or in preparation for 1994 and 1995; e) meetings of the Advisory Committees and Working/Study Groups; f) Secretariat matters, particularly recently implemented smoking restrictions in ICES Headquarters; and g) publication activities.

There were no comments on the document or the General Secretary's report.

Agenda Item 2 COUNCIL MEMBERSHIP

The **General Secretary** reported that he had received a copy of the official instrument of accession to the Convention submitted by the Government of Latvia on 17 September 1993 to the Depository Government of Denmark which formally made Latvia the 18th Member Country of ICES. The Danish Ministry of Foreign Affairs had also advised him the previous day that the necessary three quarters (13) of the Member Countries (Norway being the most recent) had ratified the application for membership submitted in May by Estonia and that the Government of Estonia had been invited to submit an instrument of accession to the Convention. It was unclear when the Government of Estonia would decide to do this and become the 19th Member Country.

He also reported that expressions of interest in Council membership had been received from Lithuania and Belarus. Information had been sent to officials in both countries, but no further contact had resulted. It was anticipated that Lithuania would quite likely seek Council membership at some future time.

In conclusion, he noted that the President and himself had visited both Estonia and Latvia in March and had held fruitful discussions regarding Council membership.

Agenda Item 3 APPOINTMENT OF NEW GENERAL SECRETARY

The **President**, after asking Prof. Hopkins and Mr MacLennan (who were both candidates) to withdraw from the meeting, drew attention to the letter of 10 August that he had sent to Delegates. The letter had explained a) the action taken by the Bureau at its mid-term meeting in reducing the number of candidates from 30 to 7 (one of these had subsequently withdrawn), b) the interview process for the shortlisted candidates that would take place on 31 August and 1 September at ICES Headquarters involving an Interview Committee consisting of the President, Mr Maucorps, and Mr Møller Christensen, and an international management consultant (from Mercuri Urval in Copenhagen), and c) the necessity for no lobbying or

campaigning for any of the candidates to ensure that the eventual choice could be based strictly on merit and qualifications. The candidates as well as the members of the Interview Committee had completed questionnaires sent to them by the consultant which had provided him with information about each candidate and about the Committee's views on the management ability and personal qualities needed for the position. Each candidate had been interviewed first by the Committee, using a series of standard questions, and second by the consultant. The comprehensive interview process had indicated that one candidate was ranked well above the other five candidates, all of whom were closely grouped on the basis of the composite evaluation. The candidate in question possessed many features considered ideal for the position of General Secretary, including a knowledge of ICES, an awareness, sensitivity, and understanding of the science and the politics of both fisheries and marine environmental issues, and the nature of the linkage between the two, and a broad and relevant scientific background which was viewed as vital. The Interview Committee, therefore, had recommended to the Bureau, at its meeting on 22 September, that the Council should appoint this single candidate as the new General Secretary. The Bureau, in turn, had unanimously agree to recommend to the Council that this candidate, Prof. Chris Hopkins, be appointed as the new General Secretary.

The **Delegate of Iceland**, satisfied that the evaluation of all the candidates, and particularly the interview process, had been the most thorough that had ever been conducted in selecting a General Secretary, congratulated the Bureau for its work and wholeheartedly moved that the Council endorse the Bureau's recommendation. The **Delegate of Spain** seconded this motion.

The **President** indicated that, if the Council could agree to the Bureau's recommendation, he intended to inform the five unsuccessful candidates (only two of which were presently at the Statutory Meeting) of the Council's decision before having the appointment of Prof. Hopkins announced publicly.

There being no comments or questions, the Council gave its unanimous approval to the recommendation to appoint Prof. Hopkins as the new General Secretary.

The **President** noted that there had been 25 extremely good candidates out of the original 30, with the final six being outstanding, and that the remaining five of the shortlisted candidates, although disappointed in not being selected, should still view themselves as five of the best six out of the 30 candidates.

Following the return of Prof. Hopkins and Mr MacLennan to the meeting after the President had informed them of the Council's decision, the Council expressed its appreciation, particularly to Mr MacLennan, with a round of applause. **Prof. Hopkins** responded that he was deeply honoured and very humble, it would be an extraordinary pleasure for him to serve the Council in this capacity, and he would accept the Council's invitation.

The **President** pointed out that the appointment of Prof. Hopkins, who was currently the Chairman of the Consultative Committee, would require the Committee to elect a new Chairman. Plans would be implemented to schedule a special session of the Committee for that purpose during lunch time on Monday 27 September.

In concluding this agenda item, the **President** asked Delegates not to divulge the Council's decision in advance of his making the announcement at the reception to be held that evening.

Agenda Item 4 ELECTION OF TWO VICE-PRESIDENTS

Elections were held to elect two Vice-Presidents, following procedures described in Rule 5 of the Rules of Procedure. **Dr Pentti Mälkki** (Finland) and **Mr David N. MacLennan** (United Kingdom) were elected to three-year terms beginning 1 November 1993.

Agenda Item 5 RELATIONS WITH OTHER INTERNATIONAL ORGANIZATIONS

The **General Secretary** summarized some of the key issues pertaining to the Council's working relations with several international organizations, reference to which was made in Doc. C.M. 1993/Del:2.

OSPARCOM

The Oslo and Paris Commissions would be replaced in the next year or so by a new Paris Commission. Discussions had taken place on several occasions during the past year with representatives of OSPARCOM relative to the future working relationship between ICES and the new PARCOM, particularly with respect to the provision of advice from ACME and interactions with the new Commission's Environmental Assessment and Monitoring Committee. The working relationship would eventually be formalized in a Memorandum of Understanding, a draft of which had been prepared by the Secretariat, discussed with OSPARCOM, and examined briefly by the Bureau. It was envisaged that an agreed Memorandum would be available for approval in 1994. Satisfactory progress had been made in negotiating a financial contribution to be paid by OSPARCOM in exchange for scientific advice and data handling services from ICES. It was estimated that about 84% of the costs incurred by the Council in providing advice and services would be covered by the 1993/1994 OSPARCOM contribution.

Commission of the EC

Although most of the Council's cooperation with the Commission of the EC was with the Directorate General for Fisheries (DG XIV) related to advice on fisheries management, there was increasing activity with the Marine Science and Technology (MAST) programme of the Directorate General for Science, Research and Development (DG XII). This consisted mainly of participation by the ICES Oceanography Secretary in the work of the MAST Data Committee. Possible new developments might require the Secretariat to be contracted in partnership with others to provide data management support for MAST projects in the ICES area. Questions concerning whether it would be appropriate for ICES to be involved had been discussed, and a clearly defined commitment which would satisfy the interests of both ICES and the Commission had yet to identified. Accepting contractual data handling work of this type would constitute a somewhat new area of activity for the Secretariat. The Bureau, in considering this matter, had agreed that ICES must become involved rather than isolate itself from this type of activity, but the exact way in which such involvement would be accomplished was still under consideration. There would, however, not be any financial implications to the Council since the cost for extra staff and equipment resources would be covered by the contracts.

Arctic Monitoring and Assessment Programme

The Arctic Monitoring and Assessment Programme (AMAP) had been established in 1991 by Canada, Denmark, Finland, Iceland, Norway, Sweden, Russia, and the USA, with a Secretariat located in Oslo. There was a possibility that the ICES Secretariat would be asked to serve as the data centre for AMAP, beginning in 1995, in much the same way that it served as data centre for OSPARCOM and the North Sea Task Force, with perhaps an equivalent level of work in exchange for an appropriate financial contribution. ICES had already been requested by the AMAP Secretariat to contribute to the review of AMAP and especially its marine component. This review had been handled by ACME at its June 1993 meeting and the results forwarded to AMAP.

No Council action was required at the present time, however, a working relationship with AMAP would appear to be of interest to the Council. Since nearly all of the AMAP countries were non-EC members, this would be an excellent opportunity for them to realize some tangible benefits from their membership in ICES which were generally enjoyed to a greater extent by those countries surrounding the North Sea.

In reply to a question by the **Delegate of Finland**, the **General Secretary** noted that AMAP had been established to monitor the levels and assess the effects of anthropogenic pollutants in all compartments of the Arctic environment including the atmosphere, terrestrial, freshwater, and marine environments, and human health. Any ICES involvement as a data centre would apply to the marine compartment, and it was unclear whether data from other compartments might be included.

NASCO

A problem regarding the NASCO financial contribution to ICES would be considered under the report of the Finance Committee (Agenda Item 12).

NAMMCO

ICES had been represented at two meetings of the North Atlantic Marine Mammal Commission in the past year, the first in Tromsø, Norway in January (by the General Secretary and the Chairman of the Consultative Committee) and the second in Reykjavik, Iceland in July (by Mr J. Sigurjónsson of Iceland). At present the Council had no formal relationship with NAMMCO, but this matter would be kept under advisement.

IOC and SCOR

There was growing Council cooperation with both IOC and SCOR in several areas. The Council had a strong interest in IOC's programme on Ocean Science in Relation to Living Resources (OSLR), within which there was a) joint ICES/IOC sponsorship of the Study Group on the Dynamics of Algal Blooms, b) co-sponsorship, with SCOR, IOC, and PICES, of I-GLOBEC, c) the Working Group on Recruitment Processes and the Study Group on Zooplankton Production which were of close interest to IOC, and d) co-sponsorship with SCOR and IOC of the Study Group on Spatial and Temporal Integration and the 1994 Symposium on "Zooplankton Production - Measurement and Role in Global Ecosystems Dynamics and Biogeochemical Cycles". The OSLR programme was divided into two components: 1) Ecosystem Dynamics and Living Resources (EDLR), consisting of GLOBEC, Harmful Algal Blooms, and IREP, and 2) Global Ocean Observing System (GOOS) support for the UN-GEF-LME regional studies and the Continuous Plankton Recorder programme. GOOS, a joint effort of IOC, WMO, and UNEP, will provide long-term data based on a globally coordinated strategy. Perhaps the most widely encompassing such programme ever envisaged, it will be developed in phases, starting with a pilot experiment currently being planned for 1997-2007. Joint IOC-FAO *ad hoc* Intergovernmental Panel on Harmful Algal Blooms, and was viewed as playing a leading role. Denmark and Spain agreed to establish regional science and communication centres for the Harmful Algal Blooms programme. The position of OSLR Technical Secretary had previously been temporary and had been staffed by individuals seconded by IOC Member States. The current Technical Secretary was Dr Geoffrey Law-

rence (USA) and he had been preceded by Dr Tom Osborn (USA) and Dr Jürgen Alheit (Germany), both of whom were actively involved in ICES. The IOC Assembly, in March 1993, had agreed to make this a permanent position, which reflected the growing importance attached to the OSLR programme. Lastly, the contributions of the Secretariat, particularly those of the Oceanography Secretary, were important to IOC's International Oceanographic Data and Information Exchange (IODE) programme in terms of software development and data handling.

The **Delegate of the United States** indicated that the growing collaboration between IOC and ICES was positive and healthy. He drew attention to very recent developments in the GOOS programme and the need for ICES to remain informed and involved regarding the establishment of a global system for monitoring living marine resources in light of the Council's pioneering efforts in this regards.

Agenda Item 6 NORTH SEA TASK FORCE PROGRESS REPORT

The **Environment Secretary** presented a brief summary of Doc. C.M. 1993/Del:9. The past year had been very busy for the North Sea Task Force (NSTF) whose principal activity had been the final preparation of the Quality Status Report (QSR). There had been three meetings of the NSTF as well as other meetings of subsidiary groups. ACME had devoted considerable time to a comprehensive review of the QSR at its June 1993 meeting using, in part, some input from ACFM. The QSR would be presented at an Intermediate Ministerial Meeting to be held in Copenhagen in December 1993 and would also be the subject of a symposium to be held in Ebeltoft, Denmark in April 1994. The Secretariat was handling the final technical editing of the QSR which would be published early in 1994. OSPARCOM, at its June 1993 Joint Meeting, had agreed that the NSTF should be disbanded at the end of 1993 and its activities taken over by the new Paris Commission's Environmental Assessment and Monitoring Committee. ICES, as a co-sponsor of the NSTF, should also authorize this action so that the December Intermediate Ministerial Meeting could be informed accordingly. The Vice-Chairman of the NSTF (Dr John Portmann, UK), the Chairman and members of ACME, and the Oceanography and Fishery Secretaries had rendered commendable service in the preparation of the QSR. Lastly, the QSR, as an agreed statement on the environmental condition of the North Sea, was viewed as a major achievement which should serve as the basis for policy decisions on the protection of the North Sea environment for some years to come. ICES co-sponsorship of the NSTF had been essential in ensuring the strong scientific integrity of the QSR.

The **President** noted that the completion of the QSR was a major landmark in marine environmental affairs and ICES was fortunate to have played a key role. He expressed the Council's thanks to the Environment Secretary and others who, on behalf of ICES, had participated in the work of the NSTF and the preparation of the QSR.

The Council approved the request to disband the NSTF at the end of 1993.

Agenda Item 7 NINTH DIALOGUE MEETING

The **President** reported that the Ninth Dialogue Meeting, held in Edinburgh, Scotland on 7-8 June on the topic "Atlantic Salmon: A Dialogue", had been very successful. The Meeting, attended by about 120 people, had discussed the scientific and management aspects of Atlantic salmon in both the North Atlantic and the Baltic. Mr Magnus Magnusson, a well-known television personality in the UK and Ireland, Chairman of the Scottish Natural Heritage, and author of a number of books on Viking archaeology, gave the keynote address which emphasized the necessity for the management of Atlantic salmon to be based on the principle of environmental sustainability, integrated resource management, and partnership. The steering group for the Dialogue Meeting, the speakers, and others responsible for the preparation and running of the Meeting, including the co-sponsoring organizations NASCO and IBSFC, were to be commended.

The **President** noted that the planning for the Tenth Dialogue Meeting was underway and would be included in the report of the Consultative Committee (Agenda Item 13). The Meeting would focus on fisheries and environmental issues in the southern part of the ICES area.

Agenda Item 8 COUNCIL POLICY ON OBSERVER STATUS FOR NON-MEMBER COUNTRIES AND RESEARCH ORGANIZATIONS

The **President** reported that this matter had been discussed by the Bureau at its mid-term meeting following a proposal by the Delegate of the United States at the 1992 Statutory Meeting that consideration be given to developing a Council policy on granting observer status to research organizations from non-Member Countries, including possible financial aspects. The Bureau had examined existing Council policy, guidelines, and principles, including an existing policy agreed at the 1985 Statutory Meeting which allowed the Council to grant observer status to international organizations having closely related interests (i.e., the conduct, funding or management of marine research). Therefore, existing policy gave the Council (and the Bureau on its behalf) the authority to grant observer status to research institutions such as the South African Sea Fisheries Research Institute. The Bureau recognized that NGOs needed to be treated differ-

ently than other organizations or institutions (e.g., charged an observer fee), but felt that there was no justification for seeking such a fee from a scientific organization or institution. The first two criteria in the Council's policy governing observership of NGOs were also applicable to research organizations. Consequently, the Bureau felt that it was unnecessary to create an additional policy on observer status for research institutions or organizations in non-Member Countries, but that the existing policy and guidelines, together with the Bureau's best judgement, should be used in deciding such questions, and to refer such decisions to the Delegates only in particularly sensitive situations.

The **Delegate of the United States** expressed his appreciation to the Bureau for having thoroughly considered this matter. He could accept the Bureau's conclusions, but suggested that a fee might be appropriate if the number of participants from a particular observer institution increased to the point where there would be obvious financial costs being incurred by the Council (documents, registration materials, other services).

The **President** accepted this suggestion and noted that the level of participation by observer organizations would be monitored accordingly.

Agenda Item 9 ICES IN THE FUTURE

The **President**, in introducing this item at the second session, reminded Delegates that the two original agenda items on "Strategic Planning for Scientific Cooperation and Advice" and "Progress in Enhancing the Interdisciplinary Role of ICES" would be considered under a general heading "ICES in the Future" for which there were four documents (Docs. C.M. 1993/Gen:4, Gen:6, and Gen:7 and a discussion paper by Dr J.G. Shepherd).

The **Chairman of the Consultative Committee** provided a synthesis of Doc. C.M. 1993/Gen:4 which contained the report of the June mid-term meeting of the Consultative Committee. The Programme Planning Group had prepared a programme of scientific sessions for the Statutory Meeting based on a record 613 papers submitted at that time, for which there was insufficient time for proper presentation and hence no inducement for the submission of good quality papers.

ACME, at its first meeting in June, had prepared a proposed strategic framework (Annex 3 of Doc. Gen:4), which the Consultative Committee had felt was an excellent start in the process of clarifying the role and function of this new Advisory Committee. Among the major points raised by ACME was the need to a) be a forum for discussing environmental interactions and other broad and generic issues in addition to providing advice to regulatory bodies, b) include the Chairman of the Marine Mammals Committee as an *ex officio* member, c) work more closely with ACFM, and d) have shorter meetings and work more intersessionally. The proposal for a strategic framework had addressed six major points: a) aims, b) customers, c) geographical scope, d) basic principles, e) issues, and f) structure and organization. The primary aim of ACME should be to provide scientific advice necessary to maintain or improve the quality of the marine environment and safeguard the sustainable use of the marine biota. The three subsidiary aims should be to a) assess and report on the present state of knowledge regarding the risks to the marine environment and the biota from a wide range of causes; b) initiate and coordinate relevant interdisciplinary investigations on assessment and measurement methods, processes, inputs, biological effects, and possible remedial measures; and c) identify the need to take environmental management decisions relating to perceived threats to the environment and biota, and advise on the scientific aspects of possible management objectives and options. Comments were provided on the following basic principles: a) good science for sound advice, b) membership and disciplines, c) national nomination of ACME members, d) interdisciplinary role of ACME, e) Working Groups, and f) priorities and generic issues. In addition, several major issues were viewed as relevant to ACME: a) advice on anthropogenic impacts on marine ecosystems, b) advice on the protection of species and habitats, including the introduction of new species, c) advice on monitoring and assessment, and d) initiation and coordination of interdisciplinary research. National pools of environmental experts might be useful from which ACME members could draw advice. Rule 26[A] of the Rules of Procedure should be amended to give ACME the same freedom as ACFM to offer advice on such matters as it deemed appropriate. ACME would consider its strategic framework further and present, if necessary, a revised version in 1994.

The substantial increase in the work load of the Chairmen of ACME and ACFM in recent years had raised the question of the position of Vice-Chairman. Further discussion on this matter would take place at the present Statutory Meeting.

The Chairman of the Marine Mammals Committee had prepared an informative paper on the science and management of marine mammals, the history of ICES involvement in marine mammal research and assessment, the need for a consistent Council policy on how to respond to requests for advice, and the type of research needed. The Consultative Committee would be submitting a recommendation on how to proceed with the development of a Council policy on the handling of marine mammal matters.

The Committee had discussed the problem of overlapping terms of reference pertaining to phytoplankton for several Working/Study Groups and would be recommending the

establishment of two new Working Groups with a clear separation of responsibilities.

The Committee had concluded that some radical changes were needed to the structure of the Statutory Meeting and to ICES in general. Fewer papers of higher quality presented at Statutory Meetings would enable further improvements to take place. The Subject/Area Committees would function more effectively in reviewing Working/Study Group reports and handling other Committee business if more Committee members and Working/Study Group Chairmen attended the Statutory Meeting. The presentation of scientific papers and the promotion of interdisciplinary cooperation would be better handled in Theme Sessions. Topics for Open Lectures should be linked more closely to ongoing ICES work and should serve more effectively as keynote addresses for the entire Statutory Meeting.

The need for more cooperation between ACFM and ACME was evident, and some Working/Study Groups and Subject/Area Committees were already involved with both Advisory Committees. The possibility of a future single Advisory Committee with various sub-groups had been raised and deserved further consideration. The Fish Capture Committee should be more involved with both ACFM and ACME. Co-sponsorship of Working/Study Groups with relevant national and international bodies may be necessary to gain access to pertinent expertise. The reports of Working/Study Groups, which were becoming progressively larger, should be submitted in a much more punctual fashion to facilitate their timely publication, distribution, and use (often by the Advisory Committees).

Many positive suggestions had been made to improve ICES; some action could be taken immediately while further progress could follow in subsequent years. It might be appropriate, with the next one or two years, for a select group of individuals from the scientific side of ICES (perhaps some of the members of the Consultative Committee) together with an equivalent number of Delegates to be given the responsibility of drafting a complete reorganization plan for ICES.

Another mid-term meeting of the full Consultative Committee would be needed in 1994 to ensure adequate and prompt follow-up to the various suggestions made in the report and the further proposals likely to come from the 1993 Statutory Meeting.

The **President**, before calling on the First Vice-President to present Doc. C.M. 1993/Gen:6, summarized very briefly the main topics in ACME's proposed strategic framework (Annex 3 of Doc. Gen:4) and stressed that this represented the environmental input to the strategic planning thrust which would provide some balance to the predominantly fisheries focus of Doc. Gen:6.

The **First Vice-President** reviewed the conclusions and recommendations of the report (Doc. Gen:6). The premise on which the Bureau Working Group had begun its discussion was that ICES had proven itself a dynamic organization responsive to external realities and demands, and adaptable to changing circumstances. External and internal factors considered likely to impact upon ICES in the coming decade had been addressed.

The Group had concluded that ICES should focus on improving its advisory and research functions within its current geographic range, and that there was no clear rationale for broadening the Council's membership base outside of the North Atlantic area. The likelihood of a growing number of ICES Member Countries joining the European Community should not change the role and position of ICES as long as its scientific independence, integrity, and excellence was maintained or preferably increased. Changes in the internal organization and structure of ICES and in its relationship with other organizations would be required to strengthen its position as a leading scientific organization in the North Atlantic.

The Group had proposed a number of changes pertaining to a) organizational structure, b) maintenance of an appropriate balance between advisory and research functions, c) relations with other programmes and organizations, and d) enhancing the ICES strategic focus.

Under **organizational structure**, the Group had examined the possible restructuring of existing Committees and recommended that the Demersal, Pelagic, and Baltic Fish Committees be merged into a single Fish Ecology Committee to provide a stronger emphasis on an ecosystem approach to fisheries management. It also recommended that the Statistics Committee be renamed to better reflect its broadened scope and activities (i.e., statistical analysis and modelling). The respective roles of the Marine Environmental Quality Committee and ACME needed to be clarified, with that of the former perceived to be research coordination and the latter advisory .

The Group also concluded that, in light of the difficulties being experienced in many North Atlantic fisheries and the realization that stock assessment studies by themselves were not providing an adequate basis for fisheries management nor ensuring sustainable fisheries, there was a strong need for studies of fisheries systems, namely the relative impact of alternative approaches to management. It was crucial for ICES to have a better appreciation for and understanding of the political, economic, and social aspects of fisheries management, rather than just the biological viewpoint. The Group recommended that ICES establish a Fisheries Management Systems Committee to promote the necessary broad interdisciplinary studies of fisheries systems.

The Group had devoted a significant amount of time to the **maintenance of an appropriate balance between advisory and research functions**. Concerns had been expressed in recent years that an excessive proportion of ICES activities had been directed towards providing advice at the expense of the research aspects of the ICES mandate, but preliminary analyses of the Council's workload over the past decade had not substantiated those concerns. The Group, however, had concluded that maintaining an appropriate balance between the advisory and research functions was critical to the continuing success of ICES. The Group made several recommendations for Secretariat action in a) developing an activities data base to facilitate further analysis on the issue of "balance", b) determining how much of the Council's budget was spent on advisory and research functions, c) and determining the "true" cost to ICES of providing advice to international commissions.

With regard to **relations with other programmes and organizations**, the Council currently had connections with about 45 different organizations, but the links with other international scientific programmes were often *ad hoc* and unstructured. The Group recommended that ICES evaluate its links with external scientific programmes and put in place appropriate mechanisms to ensure that ICES participated fully in relevant programmes. Concerning regular dialogue with other organizations, the Group recommended that ICES a) enter into discussions with FAO to explore ways and means by which the transfer of ICES expertise and knowledge could be achieved without significant additional cost to ICES, b) formalize dialogue, at least annually, with other organizations, e.g., the Commission of the European Communities and the Intergovernmental Oceanographic Commission, and c) strengthen its links with the Scientific Council of NAFO to ensure effective trans-Atlantic cooperation on research issues of mutual interest.

The **President** asked Delegates, in commenting on these two documents, to focus on a) the Statutory Meeting, including format, number of papers presented, and use of the Subject/Area Committees during the Meeting, and b) the Subject/Area Committee structure within ICES, including titles, function, relationship to Working/Study Groups and Advisory Committees, and their use outside the Meeting.

The **Acting Delegate of the United Kingdom (Dr J.G. Shepherd)** summarized a discussion paper that he had prepared and circulated to Delegates in which he offered some suggestions, a few of which were radical, for improving the Statutory Meeting and the Committee structure. In his view, the main problem was the Statutory Meeting. Although he was not a regular participant, he enjoyed attending Statutory Meetings, mainly to meet interesting people and participate in interesting discussions, but he did not enjoy Subject/Area Committee sessions. Regrettably, there was little enthusiasm at his own institute for attending Statutory Meetings. He also felt that most first-time participants at Statutory Meetings were generally disappointed. He proposed that there should be a) fewer and better-presented papers given in coherent Theme Sessions, b) preferably no more than two concurrent sessions, and c) a much clearer separation of business and scientific sessions. He reminded Delegates that five concurrent scientific sessions were being held at the same time at the present session of the Delegates meeting, one of which he very much wanted to attend and three others of which were also of interest to him. He had concluded that all scientific presentations should be given in Theme Sessions and that the Subject/Area Committees, many of whose national members never attended Statutory Meetings, should be abolished, with their duties subsumed by an enhanced Consultative Committee and the two Advisory Committees.

The **President** noted that he intended to see as many improvements as possible implemented at the 1994 Statutory Meeting, particularly with respect to the number and presentation of papers. He acknowledged the need to separate the "housekeeping" duties of the Committees from the presentation of papers, but also felt strongly that the reports of the various Working Groups, mainly those which provided input to ACFM or ACME, needed to be exposed to open discussion at the Statutory Meeting. Subject/Area Committee members at one time comprised the majority of Statutory Meeting participants, but now tended to serve more as national contact points during the year. The Committees still served a purpose, but ways had to be found to improve their functionality at Statutory Meetings.

The **Delegate of Ireland** reported a consensus from the many first-time participants from his country that the quality of many papers and many presentations was very poor and that it was difficult to understand and become a part of the ICES system. There were too many papers and a stricter adherence to the deadline for submitting titles would greatly reduce the number. A system of national review of papers using guidelines prepared by ICES would improve the quality. Chairmen/Conveners could be a positive influence in improving the quality of presentations. Subject/Area Committees, whose structure was viewed as satisfactory, would probably function better if more people became involved (e.g., Working/Study Group Chairmen), which had been the case for ACFM several years earlier. At the Statutory Meeting, Committee time should preferably be devoted to business, with all papers presented in Theme Sessions.

The **Delegate of Finland** introduced Doc. C.M. 1993/Gen:7 on the ICES Committee structure which he had prepared as a response to views expressed in the report of the mid-term meeting of the Consultative Committee (Doc. Gen:4) in light of his a) uncertainty about the role

of the Marine Environmental Quality Committee following the establishment of ACME, b) concern for the role of chemical oceanography versus environmental chemistry, and c) concern with the agenda of the Biological Oceanography Committee. He agreed fully that "the new ACME needed to be given full attention and a chance to develop before changes were seriously considered for other Committees", but he also felt that the Subject/Area Committees should be asked immediately to analyze their individual roles, main activities, extent of overlap and cooperation with other Committees, and gaps in the ICES structure and to suggest improvements in the existing structure. He proposed that the Council should, as proposed by the Consultative Committee, establish as soon as possible an *ad hoc* group to draft a complete reorganizational plan for ICES.

The **Delegate of the Netherlands**, as a first-time participant at a Statutory Meeting, felt that the scientific and business parts of the Meeting should be separated and the scientific part had to be improved and better organized. The **Delegate of the United States** suggested that the discussion had to be separated into a) immediate changes for improving the 1994 Statutory Meeting and b) longer-term changes to the entire ICES structure. Whereas there was no tangible proposal in hand for restructuring ICES and the Committees, there were many useful and agreed-upon suggestions for improving the Statutory Meeting. He supported a) holding all Committee business sessions in a specific time period and giving all scientific presentations in Theme Sessions, b) enforcing deadlines for the submission of titles to help reduce the number of papers instead of setting a limit (e.g., 200) on the number, c) devising a better system for the presentation of papers, and d) establishing an *ad hoc* group to work intersessionally on proposals for long-term structural changes.

The **President** reiterated his intent to only implement procedural changes in the Statutory Meeting at the present time. Structural changes (e.g., abolishing or establishing Committees) would involve modifications to the Rules of Procedure which, according to Rule 16, required either two months' notice to Contracting Parties and Delegates or unanimous consent by Delegates.

The **Delegate of Iceland** noted that the earlier statement by the Acting Delegate of the United Kingdom seemed to be a paradox because a) he had indicated very little interest among the staff (including himself) in Lowestoft for the Statutory Meeting, but yet more than 500 participants at this year's meeting suggested strong interest on the part of somebody, and b) he had expressed a desire to attend three very interesting sessions taking place at the same time as the Delegates meeting.

The **Delegate of Germany** referred to the Council's principal functions or duties as specified in Article 1 of the Convention (i.e., promote and encourage research, draw up programmes and organize cooperative research, publish and disseminate scientific results) and suggested that the presentation of papers at Statutory Meetings was not necessarily one of those duties. It would be premature to make any changes to the Committee structure without giving the Committees a chance to make suggestions or improvements. He felt that Committee business needed to be handled more thoroughly and in a different manner than at present.

The **Delegate of Spain** offered several observations. The number of participants at Statutory Meetings had been increasing in recent years. It was not possible to please everyone. but before attempting to restructure ICES or the Statutory Meeting, it would be appropriate to have the results of an opinion poll of participants. He had observed many young scientists at this year's Meeting, most of whom seemed to be pleased with the various Committee and Theme Sessions. The number of papers should be reduced and Committee Chairmen should be given the responsibility of deciding how they should be presented so as to maximize the available time.

The **Delegate of Denmark** pointed out that the Statutory Meeting served two important purposes: a scientific symposium and a forum for research management (e.g., scheduling of Working Group meetings, deciding terms of reference). If the Meeting were restructured entirely as the former, as suggested by some people, research management would suffer. If the Subject/Area Committees were dissolved, responsibility for the basic input into research management could be assigned to Working Groups, where many of the ideas and proposals presently originated.

The **Delegate of Norway** agreed with most of the views expressed, but felt that the Statutory Meeting should not be divided into two separate parts. The interrelationship between the science and the business was necessary.

The **Delegate of Canada** noted that the various documents which had been presented and the views expressed by Delegates indicated a clear consensus for the need for improvements in the conduct of Statutory Meetings, some of which should be implemented in 1994, but no clear consensus on the necessary structural changes to ICES. Further views on the latter would hopefully emerge from additional discussion during the Statutory Meeting. It would be necessary to establish a follow-up process involving selected Bureau members, Delegates, and others who would work intersessionally to develop proposals for change to be presented at the 1994 Statutory Meeting.

The **President** considered it important for the various suggestions for structural change to be organized and assigned priorities so that an *ad hoc* group would have some guidance for its work.

The **Chairman of the Consultative Committee** addressed the question of attracting new scientific expertise (not necessarily young people) into the work of ICES. One way would be to sponsor interesting Symposia and another would be to have a good scientific programme within the Working/Study Groups.

At the third session, the **President** summarized the main proposals for change that had clearly emerged from the discussion at the second session of the Delegates meeting and from Theme Session U. Concerning the format of the Statutory Meeting, the number of presentations of papers should be reduced, but not the number of papers submitted. There should be more Theme Sessions and fewer Committee sessions. There should be more separation of scientific discussions from business discussions within the Committees, but a sufficient retention of the linkage between the science and the business to ensure that the latter was driven by the former. Concerning the structure of ICES, caution would have to be exercised in considering combining, dissolving, or establishing Committees since many of the suggestions for improving the Statutory Meeting would also solve the Committee problems. In light of the clear and strong response from Delegates and other Statutory Meeting participants, it would not be necessary to establish an *ad hoc* group to meet intersessionally to carry the matter further. All of the proposals for improving the format of the Statutory Meeting and the structure of ICES would be considered and developed further by the Consultative Committee at its June 1994 mid-term meeting and reported to the Bureau at its June 1994 mid-term meeting and to the Delegates at the 1994 Statutory Meeting, at which time as many improvements as possible to the format of the Statutory Meeting would be implemented.

The **Delegate of Norway**, referring to several proposals in Doc. Gen:6, agreed with the idea of merging the Demersal, Pelagic, and Baltic Fish Committees into a new Fish Ecology Committee, but suggested including the Fish Capture Committee as well. He felt that area-based fish stock assessment Working Groups and a common Working Group on assessment techniques and methods were appropriate, but expressed concern that any reorganization of Working Groups or Committees (which, if done, should be unanimously acceptable) must be done carefully and not have any negative impact on the important work of providing scientific advice to Member Country governments or regulatory commissions. He also favoured the establishment of a Fisheries Management Systems Committee and strongly supported the recommendation to allocate at least a half day of the current "free" time for Delegates at Statutory Meetings for discussion of strategic issues.

The **Delegate of Sweden** endorsed the establishment of a Fisheries Management Systems Committee and noted the need for a forum for the consideration of management (including socio-economic) and biological issues.

The **Delegate of Canada** also supported the eventual establishment of a Fisheries Management Systems Committee and suggested that a Theme Session on this general topic at the 1994 Statutory Meeting would be useful. In addition, he favoured the proposal for Delegates to use part of the present two days of free time at the Statutory Meeting (mid-day Tuesday to mid-day Thursday of the second week) for discussing strategic issues, and he suggested that a topic for such a discussion at the 1994 Statutory Meeting be identified by the Bureau at its 1994 mid-term meeting.

The **Delegate of Finland** noted that several Committee reports had drawn attention to the lack of a clear ICES policy on various issues, and he suggested that this might be a topic for a future discussion on strategic issues.

The **President** supported the proposal by the Delegate of Canada for a 1994 Theme Session as a first step towards the possible establishment of a Fisheries Management Systems Committee. It would be premature to establish a Committee in the absence of any clear terms of reference or focus, which would be likely to emerge from a Theme Session or possibly a Working Group. Concerning the use by Delegates of "free" time in the second week of the Statutory Meeting (i.e., mid-day Tuesday to mid-day Thursday), he viewed that as an opportune time for informal "brainstorming" sessions which could focus on announced topics. A brief report could be prepared highlighting the main points (e.g., decisions, goals), but further demands on Secretariat support would have to be avoided. An alternative option would be to hold all sessions of the Delegates meeting in the second week to enable Delegates to attend all scientific sessions, with non-scientific agenda items handled during Delegates sessions on Tuesday afternoon or Wednesday (during the latter sessions of the Consultative Committee meeting). Major disadvantages to this option would be that the General Secretary could not participate in concurrent sessions of the Delegates and Consultative Committee meetings, and the deferral of critical administrative matters until the second week would introduce time constraints in resolving serious problems that frequently arose.

The **Delegate of the United States** was in agreement with the need to make better use of the available time for Delegates as a group. He suggested that the entire *modus operandi* for Delegates and the Consultative Committee be examined to improve efficiency, and questioned the need to continue with some traditional procedures and practices that were done out of habit instead of necessity.

The **Delegate of the United Kingdom** was in favour of making more constructive use of the time available to Delegates and was also supportive of the various sugges-

tions which had been put forth. In light of there being many important topics requiring discussion over the next several years which might not be adequately handled in a single "brainstorming" session at each Statutory Meeting, a specific topic could be assigned to each of several sub-groups of Delegates established at the beginning of a Statutory Meeting with these sub-groups reporting back to the full body of Delegates at a later session.

The **Delegate of Denmark** added his endorsement to the establishment of a Fisheries Management Systems Committee and to the suggestion to begin with a Theme Session in 1994. He also supported the suggestion to devote time at each Statutory Meeting for discussions on strategic issues, and proposed that discussion topics for next year be decided by the Bureau in June 1994 based on input from the Consultative Committee.

The **Delegate of Iceland**, noting that ICES was approaching its centenary and had been coordinating research for many decades, pointed out that most fish stocks were in rather poor condition in spite of all the advice given to managers by ICES. He felt that the rebuilding of those stocks was an important issue which deserved serious consideration. The Council should discuss and devise more effective means of influencing the management and exploitation of fishery resources in the North Atlantic.

The **Delegate of the Netherlands** supported the need for Delegates to have strategic discussions and proposed that the regulatory commissions to whom the Council provides advice be invited to offer their views on the ICES advice at such informal discussions.

The **Delegate of the United States** expressed the view that even though ICES had taken on a more complicated and broader range of scientific issues in recent years, the solution would not be to create more Committees or levels of organization, but to build a leaner, simpler, and more functional structure. The existing six or seven organizational levels within ICES may no longer be necessary. Seemingly radical proposals, such as to abolish the Subject/Area Committees, may be pertinent. The role of the Delegates as well as every other aspect and organizational level of the Council, viewed in a holistic manner, should be thoroughly examined.

The **Delegate of the United Kingdom** endorsed the views expressed by the Delegate of the United States regarding the need for a very careful look at the utility and value of each organizational level of ICES, and indicated that his country was looking for a radical solution to the current structure of the Council. Although some of the key attributes and strengths of ICES were its friendly atmosphere and democratic decision-making process, these could also be viewed as weaknesses because they had led to some of the problems now being confronted. He also supported the proposal by the Delegate of the Netherlands to canvass the views of the recipients of the Council's advice.

The **Delegate of Iceland** was of the opinion that the discussion during Theme Session U had indicated less of a need for radical change to the Statutory Meeting and the structure of ICES than had previously been thought to be the case. Although a careful examination of the various elements of the organization would be appropriate, it was clear that many improvements could be accomplished without undergoing major structural modifications.

The **Delegate of Denmark** suggested that any move towards radical changes in the organization would have to be based on a careful analysis of all the various aspects of the work, a task which would likely involve a considerable amount of time and effort and possibly requiring special meetings of Delegates outside the Statutory Meeting and professional consultation and assistance.

The **Delegate of France**, referring to the suggestion by the Delegate of the Netherlands to have discussions with the Council's clients, drew attention to the Dialogue Meetings whose intent had been to promote discussion among scientists (ICES), managers/administrators (clients), and industry representatives. It would be unfortunate to establish a new forum for discussion with clients when a good one already existed. He also agreed with the proposal by the Delegate of Denmark to obtain professional advice relative to any major structural changes to ICES.

The **Delegate of Latvia** supported the suggestion for a Fisheries Management Systems Committee and cited the frequent failure of regulatory commissions to adequately take account of the ICES advice as a strong reason for improving the effectiveness of our recommendations and the linkage between science and management. He cautioned against the possibility of the scientific work of ICES being unduly influenced by managers.

The **Delegate of Germany** noted that out of the 45 international organizations with whom the Council had relationships, seven had formal agreements with and seven (some being part of the first group of seven) received advice from ICES. Clients would continue to request and pay for advice if they were satisfied with its quality. Care should be taken to avoid influence from clients that might reduce the scientific quality of the advice. He felt that ICES was a very good organization which, like a machine, frequently needed a little lubrication to reduce the friction and make it run more smoothly, and new parts were not necessarily required. He advised against making any structural changes to the organization.

The **President** concluded discussion on this agenda item by summarizing the main points that had emerged: 1) a

fisheries management forum should be established beginning with a Theme Session at the 1994 Statutory Meeting and possibly moving thereafter to something more structured and permanent; 2) all the structures and functions of the Council, including the Delegates should be carefully and thoroughly examined; 3) proceed immediately but with caution in all those matters; 4) consultations with client organizations should be initiated regarding ways to improve the mechanism for providing advice; and 5) ways should be examined to improve the effectiveness of our scientific recommendations. These and other ideas would be referred to the Consultative Committee for further consideration and development, a report would be provided to the Bureau in June 1994, and as many improvements as possible would be implemented at the 1994 Statutory Meeting.

Agenda Item 10 APPOINTMENT OF TWO MEMBERS OF FINANCE COMMITTEE

The **President** reminded the Council of the vacancy on the Finance Committee created by the resignation, some time earlier, of Dr Jerzy Kleniewski (Poland). The Bureau wished to recommend the appointment of Dr Anatoli A. Elizarov (Russia) as a member of the Committee for a three-year term, with the first year of his term being the present year. This recommendation was unanimously approved.

The **President** informed the Council that another member would have to be appointed to the Finance Committee to fill the vacancy created by the election of Dr Pentti Mälkki (Finland) as a new Vice-President. Dr Mälkki was ineligible to be a Vice-President as well as a member of the Committee. The proposal for Mr Peter Hoogweg (Netherlands) to be appointed to a three-year term was approved unanimously.

These appointments resulted in the following membership of the Finance Committee (last year of appointment in parentheses) for 1993/1994:

Mr Orestes Cendrero (Spain), Chairman (1994)
Dr Anatoli A. Elizarov (Russia) (1995)
Mr Peter Hoogweg (Netherlands) (1996)
Mr Niels Axel Nielsen (Denmark) (obligatory)
Dr Ingemar Olsson (Sweden) (1995)

Agenda Item 11 REPORT OF FINANCE COMMITTEE

The **Chairman of the Finance Committee** presented the Committee's report, most of which is reflected in Items 11.1 - 11.5.

The **Chairman** reported on the recent difficulties between the Secretariat and the Danish Auditor General regarding a recent change in the pension plan for some staff members, as described in the Committee's report. The Bureau had viewed the working relationship with the auditors to be totally unacceptable and had decided that the matter should be taken up by the Danish Delegates at a higher level in the Danish Administration. The General Secretary had proposed that consideration be given to engaging a private accounting firm, but the Committee had agreed with the Bureau that the matter should be investigated further before considering this action.

The **Chairman** also reported on the status of the timekeeping system that had been implemented in the Secretariat on 1 November 1992 in response to the Council's request to conduct a feasibility study on a product-oriented budgeting system. The Committee had been pleased with the system and the progress made and saw the system as providing a good basis for costing the services provided to the "customer" organizations.

Following its presentation (see the following sections), the Council approved the entire Committee report.

Item 11.1 Audited Accounts for Financial Year 1991/1992

The Finance Committee had reviewed the Audited Accounts and Balance Sheet for 1991/1992, contained in Doc. C.M. 1993/Del:1, had no questions or comments, and approved and signed the Accounts and Balance Sheet on behalf of the Council.

The Audited Accounts were approved by the Council.

Item 11.2 Estimated Accounts for Financial Year 1992/1993

The Committee had reviewed the Estimated Accounts for Financial Year 1992/1993 (Doc. C.M. 1993/Del:4). The General Secretary had recommended that the excess of income over expenditure in the current year be transferred to the Computer Equipment Fund in order to cover the cost of routine replacements or additions to the computer network. One such need was to upgrade the two existing HP9000/400 series Unix workstations in order to take advantage of newer and less expensive software available only on the new model and to achieve a significant improvement in computing speed. The cost of this upgrade would be about DKK 225,000, but savings in less expensive software and service contracts would neutralize this cost within 2-3 years.

The Committee had approved the Estimated Accounts and recommended their acceptance by the Council. The Committee also agreed to recommend that 1) the excess of income over expenditure in the current year be transferred to the Computer Equipment Fund and 2) the Sec-

retariat be authorized to purchase the new workstations, with the cost to be covered from the Fund.

The Council approved the Estimated Accounts and the two recommendations.

Item 11.3 Budget for Financial Year 1993/1994

The **Chairman of the Finance Committee** drew attention to a **revised** draft Budget for 1993/1994 (Doc. C.M. 1993/Del:5 Revised) and to several typing errors. The Committee had no major questions on the original draft Budget. The contribution from the Commission of the EC, which was fixed in ECU, had been less than budgeted in 1992/1993 because of an unanticipated change in the DKK/ECU exchange rate. The General Secretary had contacted the Commission on this matter and requested that the existing Agreement on Cooperation be amended to fix the contribution in DKK rather than ECU. The Committee recommended that further communication be undertaken with the Commission on this matter.

The Committee had approved the draft Budget for 1993/1994 and, in light of the accession of Latvia to the Council's Convention, had agreed that it should be revised to reflect a contribution of DKK 50,000 from Latvia, with this amount distributed as appropriate on the expenditure side to account for additional expenses for ACFM, ACME, and office expenses. The Committee had agreed not to include any contributions from Estonia since it had not yet acceded to the Convention. The Committee had recommended that the revised draft Budget be adopted by the Council.

The Council had no questions or comments and the revised draft Budget for 1993/1994 was unanimously approved by a roll call vote.

Item 11.4 Forecast Budget for Financial Year 1994/1995

The **Chairman of the Finance Committee** drew attention to a **revised** draft Forecast Budget for 1994/1995 (Doc. C.M. 1993/Del:6 Revised) and to several typing errors. The Committee had approved the original draft Forecast Budget, but in light of the accession of Latvia to the Convention and the Committee's recommendations to the Council regarding a reduction in the number of shares held by Russia and in the contribution of NASCO, had agreed that a revised draft Forecast Budget should be prepared to reflect these changes in income and the appropriate changes in expenditure to cover anticipated costs associated with the membership of Latvia. The Committee had also agreed to present two options for income in 1994/1995, one with 4 shares for Russia and one with 3 shares.

The Committee had recommended that the revised draft Forecast Budget for 1994/1995 be adopted.

The **President**, before opening discussion on the Forecast Budget, asked the Chairman to present the portion of the Committee's report dealing with contributions to ICES budgets. [*The Chairman's presentation, the subsequent discussion thereon, and the decisions taken are summarized under Item 11.5.*]

Following the decision to reduce the number of shares held by Russia from 4 to 3½ and before calling for a vote on the **revised** draft Forecast Budget (Option 2 as amended to reflect 3½ instead of 3 shares for Russia and ½ instead of 1 share attributed to "Unspecified source of income"), the **President** reiterated that the vote would also be to approve 1) a reduction in the NASCO contribution to 84% of the Council's estimated costs for providing advice in that year and 2) a Council policy to move towards full cost recovery from all the "customer" organizations. The roll call vote was unanimous in favour. The resulting contributions to be paid by Contracting Parties for Financial Year 1994/1995 are as follows:

Country	No. of shares[1]	DKK
Belgium	2	536,000
Canada	3	804,000
Denmark	3	804,000
Finland	1½	402,000
France	4	1,072,000
Germany	4	1,072,000
Iceland	3	804,000
Ireland	2	536,000
Netherlands	3	804,000
Norway	4	1,072,000
Poland	3	804,000
Portugal	2	536,000
Russia	3½	938,000
Spain	3	804,000
Sweden	3	804,000
United Kingdom	4	1,072,000
USA	3	804,000
Unspecified source of income[2]	½	134,000
TOTAL	51½	13,802,000

[1]One share = DKK 268,000.
[2]To be covered by a contribution of DKK 150,000 from Estonia, a transfer from the Capital Reserve Fund, or other sources unspecified at present.

Although not indicated in the above table, the contribution to be paid by Latvia in 1994/1995 is DKK 150,000.

Item 11.5 Contributions to ICES Budgets

There had been considerable discussion by the Committee on the request by Russia for a reduction from 4 to 2 shares in the Council's scheme of national contributions (Doc. C.M. 1993/Del:8). The Committee had noted that the entry of any new Member Country resulted in budget

increases for the Council and had recalled the following principles on which the current scheme of shares was based:

a) Each Contracting Party will have one share in light of the general services provided by the Council to all its members.

b) Each Contracting Party will have ½, 1, 2, or 3 additional shares, taking into account the magnitude of the Party's involvement in Council activities as well as population, gross national product, fisheries, and marine science activities in the ICES area.

The Committee had been informed that Russian catches in the Baltic Sea were now much lower than those taken by the former USSR and, although information was not available, probably also lower in other parts of the ICES area. However, fishing fleets and catches in other Member Countries had also declined since the mid-1970s when the current scheme had been adopted. The financial difficulties in Russia were discussed, but the Committee agreed that the Council's decision on the Russian request should be based on the underlying principles in the current scheme of shares and not on the current economic situation, which was also a matter of concern in other Member Countries. The Committee also felt that the Council should not consider revising the current scheme of shares until some larger issues had been addressed and resolved. The Committee was recommending that the number of shares held by Russia be reduced from 4 to 3 beginning in Financial Year 1994/1995.

Concerning a request from NASCO for a reduction in its contribution, the **Chairman** reported that the Committee, following extensive discussion, was recommending 1) the NASCO contribution for 1994/1995 be set at the amount corresponding to 84% of the Council's estimated costs for that year and 2) a policy of 100% recovery from all "customer" organizations of the costs incurred by the Council in providing requested advice and services.

The **President** briefly reviewed the two major issues behind the request by NASCO: a) the original agreement with ICES had been based on a recovery of about 20-25% of the Council's costs, and b) whereas the NASCO contribution was now about 100% of the Council's costs, all other "customers" were paying less, and in some cases considerably less, than full cost, which NASCO viewed as discriminatory. NASCO would be willing to pay 100% of the costs only if all other "customers" did the same. In the meantime, NASCO was seeking the same level of "discount" as the other "customers". The reduction of the NASCO contribution to 84% of the Council's costs, equivalent to the estimated level of contribution by OSPARCOM in 1993/1994, would only be temporary. Negotiations would be opened with all the Council's "customers" to find a way, hopefully over the next three years, to increase all such contributions to the 100% level, at which time the NASCO contribution would also be brought back up to that level.

The **Delegate of Denmark** considered it essential, in conjunction with adopting a policy of 100% cost recovery and before entering into negotiations with the "customers", to identify the precise costs to be assigned to the various "customers". The present percentages being discussed were only estimates, and there were overlapping requests for advice from several "customers" as well as Member Country governments. The results from the new timekeeping system in the Secretariat would provide the only real basis for such an analysis.

The **President** confirmed that data from the timekeeping system would provide a transparent and robust means of calculating such costs, but that it would be early 1994 before such calculations would be fully completed.

The **Delegate of Canada** emphasized that he could only agree to a temporary reduction in the NASCO contribution if, at the same time, the Council adopted a firm policy of 100% cost recovery from all "customers". The **Delegate of the United Kingdom** supported this view and further suggested that a target date for achieving this might be 1995/1996.

The **Delegate of Iceland** preferred not to reduce the NASCO contribution, since it was at the appropriate level, thus ensuring a stronger negotiating position for raising the contributions of the other "customers".

The **Delegate of France** felt that the NASCO request for a temporary reduction in its contribution was valid, but he fully supported the views of the Canadian Delegate to adopt, at the same time, a Council policy of 100% cost recovery.

The **President** elaborated further on the justification for the proposed level of the NASCO contribution, and that the expected target date for achieving 100% cost recovery was more likely 1997/1998 rather than 1995/1996.

The **Delegate of Denmark** could accept the slight temporary reduction in the NASCO contribution, but felt that more emphasis should be placed on "full" rather than "100%" cost recovery since there was considerable uncertainty regarding the precise levels of the costs. The **Delegate of the United Kingdom** supported this view. The **Chairman of the Finance Committee** pointed out that the new timekeeping system would provide the basis for determining actual costs and that it would be possible to know the exact cost of advice and services.

The **Delegate of the Netherlands** felt there were strong reasons for the Council to receive 100% compensation

for the services it rendered. If the contributions from "customers" were increased to that level, then national contributions would decrease. The **Delegate of Finland** reminded the Council that this point had been made last year and had been a strong basis for advocating a policy of 100% cost recovery. The **Delegate of Sweden** reported that his country could accept the proposed reduction of the NASCO contribution in 1994/1995.

The **President** concluded discussion on the question of reducing the NASCO contribution by noting that there was a consensus to do so and, at the same time, adopt a policy of 100% cost recovery. He also noted that the latter issue should have been addressed earlier, but the resources on which to base firm cost estimates had been lacking. He then asked for comments on the request for a reduction in the number of shares held by Russia.

The **Delegate of Canada** expressed sympathy for the Committee's recommendation to reduce the number of shares held by Russia from 4 to 3, but wanted clarification on the financial arrangements associated with the accession of Latvia and Estonia and when the contributions from these two countries would fully compensate for the loss of one Russian share.

The **General Secretary** explained that the financial terms, proposed by the Council at the 1992 Statutory Meeting and negotiated with the countries in question, called for a contribution of DKK 50,000 in the first year (1993/1994), DKK 150,000 in the second year (1994/1995), and a full share in the third (1995/1996) and succeeding years. Even though the combined contributions of Latvia and Estonia in 1994/1995 (DKK 300,000) would be somewhat greater than one share (DKK 268,000), the extra expenses incurred by the Council as a consequence of two additional Member Countries (e.g., ACFM and ACME meetings, reports and documents, communication) would reduce the additional income to a level less than the value of one share. Therefore, 1995/1996 would be the earliest that the contributions from Latvia and Estonia would fully compensate for the loss of one Russian share.

In light of the General Secretary's explanation, the **Delegate of Canada**, recalling the debate and difficulties that had arisen in 1990 when Member Countries had been forced to cover some of the loss in income (by means of a Supplementary Budget) when the German Democratic Republic ceased being a Member Country, expressed concern with the consequences of Option 2 in the **revised** draft Forecast Budget (a reduction from 4 to 3 shares for Russia). The **Delegate of the United States** also expressed concern with the item "Unspecified source of income" in the **revised** draft Forecast Budget and the notation that it would be covered by a contribution from Estonia, a transfer from the Capital Reserve Fund, or other sources unspecified at present.

The **General Secretary** pointed out that in both the **revised** draft Budget and Forecast Budget, the contribution of Latvia was not included under "National Contributions", but rather as an additional income item "Special Income from Latvia". This had been done to avoid making any changes to the total amounts for "National Contributions" which would in turn have mandated similar changes in the contributions from the various "customer" organizations. Furthermore, to have included income from Latvia under "National Contributions" and to have shown one share for this country at a time when the contribution would not have corresponded to the value of one share would have led to confusion and complications. Therefore, it had been decided to show the income from Latvia in a separate category outside of "National Contributions" and to assign the share formerly held by Russia to "Unspecified source of income", thus keeping the total number of shares (51½) and the total national contributions the same as in the original draft Forecast Budget. He further explained that adoption of the Forecast Budget for 1994/1995 also fixed the national contributions for that year, but in the draft Budget for 1994/1995 (to be approved at the 1994 Statutory Meeting), other changes to the income side could be made reflecting, for example, increased contributions from commissions, income from Estonia, a transfer from the Capital Reserve Fund, and so on.

In response to a suggestion from the **Delegate of Canada** that any possible shortfall in income in 1994/1995 would be avoided if some increase in contributions from "customer" organizations could be achieved by that time, the **President** indicated that he intended to open negotiations as early as possible in 1994, that he hoped to be able to report substantial progress to the Bureau at its 1994 mid-term meeting, but that he could not promise any increase in contributions as early as 1994.

The **Delegate of Iceland** also recalled the Council's financial discussions in 1990 and noted that Norway and Iceland had each chosen to "purchase" one of the three shares formerly held by the German Democratic Republic. His country's decision to increase its number of shares from 2 to 3 had been on the understanding that no countries would be reducing their number. Therefore, in spite of his sympathy for the current economic difficulties being experienced by Russia, he found it very difficult to accept a proposal that would reduce the Russian contribution before such a reduction had been fully compensated by the entry of new Member Countries. He also felt that a fair balance of payments by Member Countries, based on the principles agreed in the 1970s (e.g., population, gross national product), had to be maintained, and the proposal for Russia to pay the same contribution as Iceland was not in accordance with these principles. Therefore, he found it very difficult to accept the proposal of the Finance Committee.

The **President**, as well as the **Chairman of the Finance Committee**, pointed out that the Finance Committee's proposal to reduce the Russian contribution was contingent on this reduction being compensated by contributions from Latvia and Estonia.

The **Delegate of Russia** explained that the severe economic problems in his country might lead to his country being unable to pay its future contributions to ICES, and any assistance rendered by the Council in reducing the size of the contribution would be greatly appreciated.

The **President** (at the third session of the meeting) invited proposals on the question of reducing the number of shares held by Russia, a decision on which would require the unanimous approval of all Member Countries (ref. Article 14 of the Convention).

The **Delegate of Canada** noted that a consensus on how to proceed had not emerged from the first discussion. A significant change in circumstances for Russia dictated a change in its contribution which the Bureau, at its mid-term meeting, had suggested be done gradually over several years. Based on private consultations with various Delegates since the first discussion, he wished to offer a "middle-ground" proposal in which the number of shares would be reduced from 4 to 3½ in 1994/1995 and from 3½ to 3 in 1995/1996. The **Delegates of France and Germany** supported this proposal.

The **Delegate of Iceland** offered an amendment to this proposal to reduce the number of shares for Russia from 4 to 3½ in 1994/1995 and defer until next year any decision on reducing the number of shares further.

The **President** reiterated the three principal proposals on the table: 1) Option 1 in the **revised** draft Forecast Budget in which there was no change in the Russian contribution, 2) Option 2 in the **revised** draft Forecast Budget in which the number of shares was reduced from 4 to 3 beginning in 1994/1995, and 3) a reduction in the number of shares from 4 to 3½ in 1994/1995 and a further reduction to 3 in 1995/1996 and succeeding years, for which an amendment had been offered to defer until next year a decision on whether or not to reduce the number of shares to 3 in 1995/1996.

After further consideration, the **Delegate of Iceland** withdrew the amendment that he had offered.

The **President** recognized that a number of Delegates had made concessions on this matter, for which he was grateful, but he felt that there was now agreement and called for a roll call vote on the proposal to reduce the number of shares for Russia to 3½ in 1994/1995 and to 3 in 1995/1996 and subsequent years. The proposal was approved unanimously.

The **President** drew attention to the difficulties that the Council would encounter if it became necessary to renegotiate an entirely new scheme of national contributions. Therefore, he asked for the cooperation of all Member Countries in continuing with the present arrangement, even though for some the existing scheme might not be entirely satisfactory.

Agenda Item 12 REPORT OF PUBLICATIONS COMMITTEE

The **Chairman of the Publications Committee** presented the Committee's report and highlighted various items. There had been good progress with publication activities in the past year; a number of issues of the various series had been published and the Secretariat had also taken on responsibility for the technical editing and supervision of the final production of the North Sea Task Force Quality Status Report.

Delays in the publication of *ICES Fisheries Statistics*, due to late submission of data, had stimulated discussion on ways to remedy this problem, the validity of continuing to publish these data, and their reliability. The Committee had concluded that attention should be focused on the need to submit data as soon as possible and had supported the Statistics Committee's recommendation calling attention to the problem.

Income from the sale of publications had declined from 1990/1991 to 1991/1992, which the Committee had not viewed as serious in light of the explanations given.

The submission of manuscripts to the *ICES Journal of Marine Science* had increased by 40% in the last year. It was unclear when the number of issues per volume could be increased from four to six, but Mini-Symposia and Theme Sessions were viewed as valuable sources of good material. The Editor and the Academic Press representative agreed to prepare some guidelines and suggestions for Committee Chairmen and Theme Session/Mini-Symposia Conveners that would encourage authors to submit papers better suited for publication and encourage Chairmen/Conveners to identify papers from their Committees/Sessions for submission to the *Journal*. This would serve not only to strengthen the *Journal*, but to improve the quality of the Statutory Meeting. Subscriptions to the *Journal* had increased slightly in 1993, and the joint ICES/Academic Press account had reached the break-even point so that the cumulative debt which had built up in the first two years would now begin to be eliminated.

The Committee recommended that the *Techniques in Marine Environmental Sciences* series should, in the future, be the *ICES Techniques in Marine Environmental Sciences* series.

The most important issue considered by the Committee was the publication of ICES Symposia proceedings. This had also been considered last year and the Committee then had recommended that Symposia proceedings be published as extra issues of the *Journal*, but this had not been accepted by the Council and the matter had again been referred to the Committee. In considering this issue again, the Committee had reviewed the pros and cons identified last year and discovered that solutions had been found for the various concerns raised earlier. In addition, the outstanding expertise of the present editorial team and the excellent working relations with Academic Press were further arguments for publishing Symposia proceedings in the *Journal*. Consequently, the Committee was recommending that Symposia proceedings should be published as extra issues of the *Journal* and that the necessary planning and preparation be initiated so that this could begin in 1995.

The Committee had also reviewed a proposal to publish regular recordings of rare fish species in the *Journal*, but a recommendation would be presented by the Consultative Committee. The Committee wished to recommend that a manuscript entitled "Guide to Premaxillae and Vertebrae of North Sea Fish", prepared by several researchers at the University of Aberdeen, be published in the *ICES Cooperative Research Report* series.

Lastly, the **Chairman** thanked the General Secretary, the Secretariat staff, and all the Editors for having done an excellent job in preparing for the meeting which had made the Committee's task much easier.

In response to a question from the **Delegate of Norway** regarding the late submission of fisheries statistics, the **Chairman of the Consultative Committee** drew attention to the report of the Consultative Committee which indicated that data had not been submitted by Spain for 1989, by Ireland, Netherlands, and Spain for 1990, and by Ireland, Netherlands, Norway (only final data), and Spain for 1991. The **President** emphasized that there had been a steady deterioration in the quality, reliability, and timeliness of the fisheries data which was making it increasingly difficult for the Working Groups and ACFM to assess the stocks and provide advice in a satisfactory manner. He drew attention to a recommendation coming from the Statistics Committee (via the Consultative Committee) which would request the Council to raise this matter at the highest possible level with all Contracting Parties.

The **Delegate of Spain** recalled that information on the occurrence of rare fish species had previously been published in nearly every issue of the former *Annales Biologiques* (discontinued in 1986), and he hoped the same procedure might be followed in the *Journal*.

The **Delegate of Canada**, noting that the problems raised the previous year had been resolved and that Academic Press felt it could handle three Symposia every two years, which he did not view as an unreasonable constraint, proposed that the Council adopt the recommendation of the Publications Committee to publish Symposia proceedings as extra issues of the *Journal*. The **Delegate of the United Kingdom** seconded this proposal and pointed out that such a move, which had also been done by other scientific organizations, would have the strong support of the scientific community in light of the *ICES Journal of Marine Science* generally having a higher status than the *ICES Marine Science Symposia* series.

The Council adopted all the recommendations of the Publication Committee, including publication of the "Guide to Premaxillae and Vertebrae of North Sea Fish" in the *ICES Cooperative Research Report* series (C.Res.1993/1:1), and approved, with thanks, the Committee's report.

Agenda Item 13 REPORT AND RECOMMENDATIONS OF CONSULTATIVE COMMITTEE

The **Chairman of the Consultative Committee** presented the Committee's report. His comments, the ensuing discussion, and the Council's actions on the various items and recommendations are summarized below.

a) Election of New Committee Chairmen

Dr. R.H. Cook (Canada), Mr M. Héral (France), and Dr R.C.A. Bannister (UK) were elected Chairmen of the Mariculture, Shellfish, and Consultative Committees, respectively, for three-year terms.

Mr E. Kirkegaard (Denmark) and Dr K. Richardson (Denmark) had been nominated by ACFM and ACME, respectively, to serve three-year terms as Chairmen of those Committees.

The Council agreed unanimously to the appointment of Mr Kirkegaard and Dr Richardson to their posts.

b) Reports of Groups Reporting to the Consultative Committee

Inter-Committee Recruitment Group

The Group had met during the Statutory Meeting and had concluded that it no longer served any useful function in light of the now-established activities in the Cod and Climate Change (CCC) programme and the smooth running of the Working Group on Recruitment Processes. The Council approved the Committee's recommendation that the Group be dissolved.

Working Group on Cod and Climate Change

The Working Group had made excellent progress in integrating relevant work of ICES within I-GLOBEC (co-

sponsored by SCOR, IOC, ICES, and PICES). There had been wide-ranging participation in the Group's 1993 meeting and three Workshops had been proposed for 1994 to maintain the present strong momentum and provide a good framework for developing the scientific requirements and data needs for the CCC. For the time being, the Working Group would remain under the parentage of the Consultative Committee.

Study Group on Long-Finned Pilot Whales

The Study Group's report had been discussed by the Committee, but the scientific results had been reviewed by the Marine Mammals Committee and would also be reviewed by ACFM. The Group had reviewed a large amount of material, but had been unable to adequately deal with multispecies interactions in the absence of further input from other ICES Working/Study Groups. The Group had been unable to satisfactorily address all of its terms of reference owing to the lack of participation of the full range of expertise within ICES. A number of points had been identified for further attention prior to the next meeting of the Group. The Committee felt that it was important for the work of the Group to be completed, but it was unclear whether and in what time frame the necessary information would become available to allow the Group to finish its work. The Group and the Marine Mammals Committee had proposed holding the next meeting of the Group in 1994, but the Consultative Committee had also considered having the Group work by correspondence in 1994 which would enable a larger number of people from more Member Countries to contribute, but which might make it very difficult to produce a fully agreed report. The Committee was generally satisfied with the progress made by the Group, but felt that expanded participation would be necessary to achieve further substantial progress. The Group would continue to remain under the parentage of the Consultative Committee until a clearer ICES policy on the handling of marine mammal issues had been formulated.

The **Delegate of the United States** commended the Study Group for its excellent report and progress and favoured having the Group work by correspondence rather than meet in 1994. He felt that the substantial list of work items identified by the Group would not be completed in time for a 1994 meeting, and greater participation in the work of the Group by more Member Countries and hence greater progress would be achieved by having the Group work by correspondence during which time an *ad hoc* Council group would be developing a policy on handling marine mammal issues.

Steering Group on Fisheries/Environmental Management Objectives and Supporting Research Programmes in the Baltic Sea

The Group, which had been a product of the Eighth Dialogue Meeting on fisheries and environmental problems in the Baltic and whose members included both scientists and managers, had experienced some problems in meeting its objectives which had been due in part to not receiving adequate support and guidance from the Committee. The Group had identified four major fields in which research was required to assist managers in making policy decisions. Further review of the report within ICES was deemed necessary, but the Group had completed its assigned task and should be dissolved. The report, being a product of a useful dialogue between scientists and managers, deserved wide circulation in order to serve as a guide to research funding agencies in the Baltic area. The Committee had requested the ICES Secretariat to investigate options for attractively "packaging" and circulating the report.

c) Tenth Dialogue Meeting

The Committee was recommending that the Tenth Dialogue Meeting, to be held in 1995, focus on fisheries, environmental, and interdisciplinary issues in the southern part of the ICES area. The proposed topic was "Fisheries and Marine Environmental Problems in the Bay of Biscay and Iberian Region". A planning meeting, to be attended by the two Advisory Committee Chairmen, representatives from France, Portugal, Spain, and the Commission of the EC, and the Fishery Secretary, would be held in the spring of 1994 in Vigo, Spain to establish a Steering Group and discuss the format, subject area, and logistic requirements for the Dialogue Meeting.

The **President** reminded Delegates that the last four Dialogue Meetings had been very successful because of the extensive preparations, selection of speakers, and orchestration of the Meetings achieved by means of several planning meetings held in advance.

The **Delegate of France** pointed out that the proposed Dialogue Meeting would receive considerable attention from scientists, managers, and industry representatives, all of whom were looking forward to it with great expectations. He suggested that a decision on whether to hold the Meeting in 1996 or 1995 be left open, pending the outcome of the spring 1994 planning meeting. Based on a detailed report from the planning meeting, the Bureau, at its June 1994 meeting, could decide whether to hold the Dialogue Meeting in 1995 (which would be preferred by many people) or 1996.

The **Chairman of the Consultative Committee** explained that the Committee, aware that ICES was sponsoring or co-sponsoring three Symposia scheduled for the June-September 1995 period, felt that organizing and holding a Dialogue Meeting in the same year might place excessive demands on ICES and particularly the Secretariat. However, he now felt that there was unlikely to be any competition between the Symposia and Dialogue Meeting, but the necessity for careful planning was very important.

The **Delegate of Spain** supported the proposal by the Delegate of France, emphasized the urgency for the proposed Dialogue Meeting and the need for careful planning, and felt that the decision as to which year should be left to the Bureau at its June 1994 meeting based on a detailed report from the planning meeting.

The **President** concluded by noting that the report of the spring 1994 planning meeting would be considered first by the Consultative Committee at its mid-term meeting in early June 1994 and then reported to the Bureau at its June meeting where a decision (1995 or 1996) would be taken.

The Council agreed to hold the Tenth Dialogue Meeting, with the proposed topic, and endorsed the suggested planning meeting (C.Res.1993/2:4) and follow-up procedure by the Bureau.

d) Council Policy on Marine Mammal Research

The Committee had concluded that the difficulties within ICES in deciding how work on marine mammals should be handled stemmed largely from the lack of a clear policy. There should be an arrangement to deal with a) the effect of contaminants, pollutants, and diseases; b) the population dynamics of marine mammals; and c) multispecies interactions and trophic relationships. A draft policy document should be prepared and reviewed at the June 1994 mid-term meeting of the Committee (C.Res. 1993/2:2).

e) Report of the Bureau Working Group on Strategic Planning for Scientific Cooperation and Advice

In reviewing the report (Doc. Gen:6), each member of the Committee had summarized the views of each of the Subject/Area and Advisory Committees. The Committee had been critical of many of the proposals in the report, whereas the comments contained in the report of the mid-term Consultative Committee meeting (Doc. Gen:4) were felt to better reflect general opinion. There was agreement on the need for changes within ICES, particularly to improve the Statutory Meeting, but there was no support for merging the Demersal, Pelagic, and Baltic Fish Committees into a single Fish Ecology Committee. The preliminary results of the questionnaire circulated to all Statutory Meeting participants had indicated a clear need for fewer papers, better quality papers, and fewer overlapping sessions. These and other related matters needed urgent resolution and implementation at the 1994 Statutory Meeting. Structural changes to ICES could not be implemented as quickly. Theme and Joint Committee Sessions for 1994 would be agreed in time to be announced in the January 1994 call for papers.

The **Delegate of Canada** commented that the Consultative Committee appeared to favour far less change in the Statutory Meeting and the ICES structure than did Delegates, and he wondered how much progress the Committee might make at its 1994 mid-term meeting. The **President** pointed out that the Committee, in fact, was advocating some changes to the format of the Statutory Meeting (better handling of papers, more use of Theme Sessions), but urging caution in changing Committees when some of the easier procedural changes at the Statutory Meeting might achieve the same results.

f) Status Report on Recording of Rare Fish Species from the ICES Area

This matter had already been covered in the report of the Publications Committee, but there would be a Consultative Committee recommendation for a meeting in the near future involving the interested parties to discuss questions relating to the management, analysis, and quality control of the data base to be used and practical details associated with the project (C.Res.1993/3:2).

g) Open Lecture and Mini-Symposium for 1995 Statutory Meeting

The Open Lecture at the 1994 Statutory Meeting would be given by Prof. J. McGlade (UK) on "Putting Fishermen into Fishery Models". There was a proposal to have Dr J.T. Carlton (USA) present the 1995 Lecture on "Benefits and Responsibilities on the Introduction or Transfer of Organisms in Mariculture", but the Committee preferred to defer a final decision until its June 1994 mid-term meeting so as to have time to explore other possibilities.

The Mini-Symposium at the 1994 Statutory Meeting, approved by the Council last year, would be on the "Influence of Large-Scale Environmental Processes on the Migration, Distribution, and Abundance of Atlantic Fish Stocks and their Implication for Management" and would be convened by Dr G.P. Arnold (UK). Since the topic proposed for the 1995 Open Lecture had also been proposed for the Mini-Symposium in 1995, the matter would be resolved at the Committee's 1994 mid-term meeting.

The **Delegate of the United States** proposed that the topic "Benefits and Responsibilities on the Introduction or Transfer of Organisms in Mariculture" be used for the Mini-Symposium instead of the Open Lecture in light of all the scientific and other problems associated with this topic within ICES. He would contact Dr Carlton regarding this matter.

The **President**, noting the rather long title for the 1994 Mini-Symposium, suggested that it be shortened.

The **Delegate of the United Kingdom** raised the question of who was responsible for covering the travel and per diem costs of Open Lecturers, noting that he had never been officially requested to cover the costs of those

from the UK. The **General Secretary** explained that the relevant Member Country had traditionally borne that expense and that Delegates, when approving Open Lecturers, should at that time be put on notice. Open Lecturers in recent years had been informed in writing that they were expected to attend the Statutory Meeting at national expense and should contact their Delegate accordingly. The **President** suggested that it might be appropriate in the future if the travel and per diem expenses (for the entire scientific portion of the Statutory Meeting) of Open Lecturers be covered by the Council. It was agreed that this matter would be placed on the agenda of the 1994 mid-term meeting of the Bureau.

h) Theme Sessions and Joint Committee Sessions for 1994 and 1995 Statutory Meetings

The Committee had prepared a number of proposed Theme and Joint Committee Sessions for 1994 and three additional ones for 1995. At the suggestion of the **Delegate of Canada** and in keeping with the earlier discussion under Agenda Item 9 regarding the eventual establishment of a Fisheries Management Systems Committee, it was agreed to schedule the Theme Session on "Improving the Link Between Fisheries Science and Management: Biological, Social, and Economic Considerations" for 1994 instead of 1995. The Council approved the list of Sessions which is given under Agenda Item 12 in the Report of Consultative Committee.

i) ICES Symposia

The following four Symposia, approved previously, would be held in 1994 and 1995:

a) "Zooplankton Production - Measurement and Role in Global Ecosystems Dynamics and Biogeochemical Cycles"; Co-Conveners: Dr M. Reeve (USA) and Mr H.-R. Skjoldal (Norway); Plymouth, England, UK; 15-18 August 1994 (C.Res.1992/2:2);

b) "Fisheries and Plankton Acoustics"; Convenor: Mr E.J. Simmonds (UK); Aberdeen, Scotland, UK; 12-16 June 1995 (C.Res.1991/2:1);

c) "Changes in the North Sea Ecosystem and their Causes: Århus 1975 Revisited"; Co-Conveners: Prof. N. Daan (Netherlands) and Dr K. Richardson (Denmark); Århus, Denmark; 11-14 July 1995 (C.Res.1992/2:1);

d) "Role of Marine Mammals in the Ecosystem" (co-sponsored by NAFO and ICES); Co-Conveners: Mr J. Sigurjónsson (Iceland) and Dr G. Stenson (Canada); Dartmouth, NS, Canada; 6-8 September 1995 (C.Res.1992/3:5).

The **Delegate of the United States** wished to support all the announced Symposia, but expressed concern that the publication of their proceedings might pose problems in light of the Council decision to discontinue, beginning in 1995, the *ICES Marine Science Symposia* series and to publish Symposia proceedings as extra issues of the *ICES Journal of Marine Science*. The **General Secretary** reported that NAFO, the other co-sponsor of the Symposium on the "Role of Marine Mammals in the Ecosystem", was apparently interested in publishing the proceedings, which would relieve the Council of that responsibility. In response to a question by the **Delegate of Iceland** regarding the number of Symposia that the Council should sponsor in a given year, the **President** confirmed that Council policy specified a maximum of two Symposia per year, but the third Symposium in 1995 ("Role of Marine Mammals in the Ecosystem") had been initiated by NAFO and ICES had only been asked to be a co-sponsor.

j) ACFM and ACME Matters

ACFM was making good progress in its work and had no major problems.

The Committee, regrettably, had little time available to discuss ACME matters, including the proposal developed by ACME at its June 1993 meeting for a strategic framework.

The **President** urged Delegates to carefully read and consider the proposed ACME strategic framework (Annex 2 in Doc. A:4 and Annex 3 in Doc. Gen:4) and provide comments to ACME at its May 1994 meeting when the strategic framework proposal would again be considered.

k) Recommendations by Advisory and Subject/ Area Committees

The **Chairman of the Consultative Committee** drew attention to the various comments made by the Committee when considering the recommendations submitted by the various Subject/Area and Advisory Committees (see Report of Consultative Committee, Agenda Item 16.1). Reference was made to the various Groups that had been dissolved, established, or renamed.

Consultative Committee

The **Delegate of the Netherlands** drew attention to the Addendum to Doc. A:4 ("Minutes of ACME Meeting"), which had just been made available to Delegates, concerning the potential overlap or relationship between ACME and the Marine Environmental Quality Committee (MEQC). The Addendum had emphasized that a multi-disciplinary forum was needed within ICES to coordinate new research activities which would be required for ACME to adequately address the types of advisory issues expected in the future, and at present MEQC was not such a forum. MEQC was dealing mainly with monitoring and quality assurance issues, but not the multi-disci-

plinary topics currently a part of ICES environmental research. He viewed this as a very important problem and wondered if there would be an opportunity to reconsider the future work of MEQC either in the Delegates meeting or by the Consultative Committee at its mid-term meeting. The **President** indicated that this would better be handled within the terms of reference of the June 1994 mid-term meeting of the Consultative Committee.

The **Chairman of the Consultative Committee** highlighted the two main items in the Addendum to Doc. A:4 entitled "Points of interest to Delegates with regard to ACME minutes". Firstly, the Bureau Working Group had questioned the potential overlap between ACME and MEQC and noted that the role of ACME was advisory and of MEQC research coordination. ACME wished to stress that in order for it to address the types of advisory issues expected in the future (e.g., effects of fisheries on the environment, ecosystem interactions and flow of contaminants in food chains, introductions, genetic changes), there would have to be a multi-disciplinary forum to coordinate the relevant research activities. At present, such a forum did not exist within ICES.

Secondly, the handling of issues relating to the introduction and transfer of marine organisms was important. ACME was concerned with how and what type of such requests for advice were being submitted to ICES and how the advice was being used. If these requests were for ecological rather than disease transfer advice, a mechanism other than the present Working Group on Introductions and Transfers of Marine Organisms, under the parentage of the Mariculture Committee, would be necessary, and all of the relevant expertise within ICES would have to be drawn upon.

The **Delegate of Ireland**, having participated in the Working Group on Introductions and Transfers of Marine Organisms and in ACME, and having experienced firsthand in her country the effectiveness of the Working Group's Code of Practice, asked for clarification as to the sensitivities associated with the use of the Code relative to both ecological and disease transfer issues.

The **Chairman of the Consultative Committee** explained that it was important for advice to be disseminated by the Advisory Committees who could, if necessary, draw upon the expertise from a wide range of Working/Study Groups in addressing a particular request for advice on introductions and transfers of organisms for which, in some cases, the full expertise may not exist within the membership of the Working Group on Introductions and Transfers of Marine Organisms. ACME had generally been satisfied with the past efforts of the Working Group, but wished to have a system in place which would guarantee that the relevant expertise, if not available in the Working Group, could be obtained elsewhere within ICES so as to provide comprehensive advice.

The **Delegate of the United States** supported the position of ACME on how to handle advice concerning introductions and transfers, in light of the much broader remit for ACME compared to the former ACMP.

The **Delegate of Sweden** was pleased to hear that ACME and the Consultative Committee were satisfied with the work of the Working Group. Since the Group had attempted to provide timely advice, he was concerned that involving ACME might result in delays. This had been the reason why the Working Group's advice had traditionally gone directly to the Council instead of through an Advisory Committee. However, ACME was a more appropriate body than the former ACMP to handle such advice, providing that it did not result in delays.

The **President** noted that it would be necessary for the Working Group to always meet prior to ACME in order to ensure the timely provision of advice. In cases of extreme urgency, advice could also be approved at the time of the Statutory Meeting. Quality of the advice should, however, not be sacrificed in order to achieve speed.

The **Environment Secretary** pointed out three issues which concerned ACME on this matter: a) principle - what requests should the Council accept; b) procedure - how should the requests be handled, requests should be submitted to the Secretariat and not directly to the Working Group; and c) communication - who should respond to the request, ACME needs to be better informed about the working procedures of the Working Group, and the Chairman should attend the next meeting of ACME.

The **President** emphasized that all requests for advice should be submitted to the Secretariat for transmission to the relevant Advisory Committee Chairman and incorporation into the terms of reference of the relevant Working/ Study Group(s).

The **Delegates of Ireland, Denmark, and Sweden** expressed satisfaction with using the two Advisory Committees for the provision of all advice on behalf of the Council and for the advice on introductions and transfers to pass through ACME.

The **Delegate of Iceland** preferred to have the Study Group on Long-Finned Pilot Whales meet in 1994 rather than work by correspondence to ensure that, in fact, some progress would be made in the near future. The Study Group had prepared a list of research tasks to be completed, some before the next meeting and others in order to complete the assigned terms of reference, and a time schedule was required to guide the completion of those tasks. He did not object to working by correspondence in 1994, but felt that a meeting would be required early in 1995. The **Delegate of the United States** agreed with that rationale and proposed that the wording of the

recommendation (C.Res.1993/2:3) be amended to indicate that a meeting would be held in 1995.

There were several questions raised relative to the three Workshops proposed on various aspects of the Cod and Climate Change programme (C.Res.1993/2:5:1 - 2:5:3). The **Delegate of Norway** wondered whether two of the Workshops could be combined, and the **Delegate of the United Kingdom** was concerned with the cost implications to Member Countries of an increasing number of meetings such as these Workshops and the risk of not being able to send the appropriate experts to each Workshop. The **Chairman of the Consultative Committee** pointed out that the topics of the three Workshops were sufficiently different to attract distinct groups of experts which needed to meet separately. A total of 19 Workshops were being proposed for Council approval, seven of which would be co-sponsored by other international organizations. ICES had agreed to support the I-GLOBEC initiative, to which three of the Workshops were connected, and participants would be attending from the other co-sponsoring organizations. The **Delegate of the United States**, although he too was concerned with increasing meetings and costs, felt that Council evolution into new interdisciplinary programmes was essential, particularly the important Cod and Climate Change programme. If the number of Groups or meetings needed to be reduced, the focus should perhaps be on old rather than new Groups. The **Delegate of Canada** agreed with the suggestion to limit the number of Groups and meetings, but felt strongly that the new Cod and Climate Change initiative, which was very important to many North Atlantic countries, needed to be supported.

The various recommendations originating from the Consultative Committee were adopted by the Council as C.Res.1993/2:1 - 2:5:3 and 3:1 - 3:3.

Fish Capture Committee

The various recommendations originating from the Fish Capture Committee were adopted by the Council as C.Res.1993/2:8 - 2:13.

Hydrography Committee

The various recommendations originating from the Hydrography Committee were adopted by the Council as C.Res.1993/1:3 - 1:4, 2:14 - 2:16, 2:47 and 2:49 (both jointly with Biological Oceanography), and 4:4.

Statistics Committee

The **President** urged Delegates to be in contact with and provide supporting information to their Foreign Ministries regarding the recommendation (C.Res.1993/4:5) to improve the reliability and credibility of fishery management advice by more timely submission of fisheries statistics, reduction or elimination of misreporting and underreporting of landings, and better information on discarded catches. The **Delegate of Denmark** proposed that the letter on this matter to be sent by the General Secretary to each Member Country through diplomatic channels (with copies to Delegates) should include a statement from ACFM in which reference would be made to specific cases in which poor catch statistics were responsible for unreliable assessment advice. The **Delegate of France** suggested that a copy of the letter should also be sent to the various regulatory commissions which used the advice so that the commissions could, in their own way, apply pressure in the various countries to try to improve the present undesirable situation.

The various recommendations originating from the Statistics Committee were adopted by the Council as C.Res. 1993/2:17, 3:4, and 4:5.

Marine Environmental Quality Committee

The **Delegate of Sweden** wondered why the venue for the meeting of the Working Group on the Baltic Marine Environment (C.Res.1993/2:21) and several related Groups had been changed from Kaliningrad, Russia or Vilnius, Lithuania to Charlottenlund, Denmark. The Kaliningrad or Vilnius venue had been proposed to ensure greater participation from the eastern Baltic countries. The **Environment Secretary** explained that the change had been made at the request of a large number of Working Group members to ensure a greater participation by Danish scientists and because one of the related Groups (C.Res.1993/2:20) needed to meet at ICES Headquarters in order to have access to a data base maintained on the Secretariat's computer system. The **President** underscored the desirability, when possible, of scheduling meetings dealing with Baltic problems at venues that would ensure full participation by scientists from those countries. The **Delegate of the United States** noted that seven of the eight recommendations from MEQC were specific to the Baltic area, whereas there certainly were relevant issues elsewhere in the ICES area also demanding attention. The **President** indicated that the recommendations in hand reflected the concerns of the working scientists within ICES, but the problem identified should be brought to the attention of the relevant Committees. The **Delegate of the United Kingdom**, noting that the relationship between ACME and MEQC remained unresolved, agreed with the Delegate of the United States and felt that the problem he had raised was extremely pertinent and needed to be considered when the respective roles of the two Committees were being considered and resolved.

The **Chairman of the Consultative Committee** pointed out that both the Mariculture Committee (C.Res.1993/4:6) and the Hydrography Committee (C.Res.1993/4:4) had submitted recommendations urging Member Countries to be more flexible in granting access by research vessels to their EEZs in urgent cases (e.g., major inflow

of water to the Baltic, unusual algal blooms). The two recommendations differed in that MEQC was making a more generalized request, whereas the Hydrography Committee had focused its request specifically on Baltic Member Countries.

The various recommendations originating from the Marine Environmental Quality Committee were adopted by the Council as C.Res.1993/2:18 - 2:23, 3:5 - 3:6, and 4:6.

Mariculture Committee

The various recommendations originating from the Mariculture Committee were adopted by the Council as C.Res.1993/2:24 - 2:28, 2:62 (jointly with ANACAT), 3:7 - 3:9, and 4:7 - 4:8.

Demersal Fish Committee

The various recommendations originating from the Demersal Fish Committee were adopted by the Council as C.Res.1993/2:29 - 2:32 and 2:34 (jointly with Pelagic Fish).

Pelagic Fish Committee

The various recommendations originating from the Pelagic Fish Committee were adopted by the Council as C.Res.1993/2:33 (jointly with Baltic Fish), 2:34 (jointly with Demersal Fish), 2:35 - 2:36, and 2:37 (jointly with Baltic Fish).

Baltic Fish Committee

The various recommendations originating from the Baltic Fish Committee were adopted by the Council as C.Res. 1993/2:33 (jointly with Pelagic Fish), 2:37 (jointly with Pelagic Fish), and 2:38 - 2:40.

Shellfish Committee

At the request of the **Delegate of the United States**, the title of and one of the terms of reference for the new Study Group on Spatfall and Recruitment in Bivalve Stocks in Europe were changed by deleting "in Europe" to reflect the relevance of and large amounts of data on those issues in North America.

The various recommendations originating from the Shellfish Committee were adopted by the Council as C.Res. 1993/2:41 - 2:46.

Biological Oceanography Committee

The **Delegate of the United Kingdom** expressed concern with the expected participation by oceanographers in the joint session between the ICES/IOC Working Group on the Dynamics of Harmful Algal Blooms and the Working Group on Shelf Seas Oceanography (C.Res.1993/2:47) in light of oceanographers needing to be quite selective in meetings attended due to limitations in national travel funds. The **Chairman of the Consultative Committee** noted that the Hydrography Committee had provided the main thrust to the recent initiatives in the area of harmful algal blooms in ICES and that the joint session of those two Groups in 1993 had been an excellent example of interdisciplinary work.

The **Delegate of Ireland** noted that the terms of reference for the Working Group on the Dynamics of Harmful Algal Blooms had not included toxin detection methodology, which needed to be dealt with by some Group. The **Delegate of the United States** recalled that this was within the purview of IOC and since IOC was a co-sponsor of the Group and one of the terms of reference mentioned IOC coordination, it would be appropriate for the Working Group to raise the matter. The **Delegate of Ireland** felt that the topic was rather specialized and should not be added to the terms of reference of the Working Group, but that the matter needed to be kept under advisement. The **Delegate of Finland**, noting that three pilot study areas (Gulf of Main, Skagerrak-Kattegat, and Iberia) were identified in the Group's terms of reference, wondered if parts of the Baltic Sea might also be included. The **Delegate of Sweden** and the **Chairman of the Consultative Committee** pointed out that the Baltic was an area for future expansion of the Group's work, but that the present terms of reference should be restricted to the three areas in question.

The various recommendations originating from the Biological Oceanography Committee were adopted by the Council as C.Res.1993/2:47 (jointly with Hydrography), 2:48, 2:49 (jointly with Hydrography), and 2:50 - 2:59.

Anadromous and Catadromous Fish Committee

Regarding the proposed Workshop on Salmon Spawning Stock Targets (C.Res.1993/2:64), which would be co-sponsored by the Atlantic Salmon Trust, the **Delegate of Ireland** explained that the Atlantic Salmon Trust had decided to hold such a workshop before ANACAT had become aware of and recommended participation in it. Co-sponsorship was viewed as beneficial since the Salmon Trust would cover some of the associated costs. Following a brief discussion, it was agreed that the report of the Workshop would be made available to the Salmon Trust.

The various recommendations originating from the Anadromous and Catadromous Fish Committee were adopted by the Council as C.Res.1993/2:60 - 2:61, 2:62 (jointly with Mariculture), and 2:63 - 2:64.

Marine Mammals Committee

The recommendation originating from the Marine Mammals Committee was adopted by the Council as C.Res. 1993/2:65.

ACME

The **Delegate of the United States** expressed concern that the added participation in the May 1994 ACME meeting (C.Res.1993/2:7) by the Chairmen of the Statistics and Marine Mammals Committee not only resulted in further costs to the Council, but also contributed to the continuing increase in the workload of these Chairmen. Although he appreciated the merits of having them participate, he preferred that it not be obligatory. The **President** viewed the additional participation as an inevitable consequence of Council decisions to broaden the interdisciplinary nature of its work. Individuals standing for election to the chairmanship of a Committee must be prepared to accept the increasing workload. The **Environment Secretary** noted that the participation of the two Chairmen in question was only to test the advantage of their further participation. ACME was conscious of the heavy workload being imposed on the Committee Chairmen and had accordingly shortened its next meeting by several days. The **Delegate of the United Kingdom** observed that ACFM had also expressed a desire to have the participation of the two Chairmen in question, and suggested that relevant Working/Study Group Chairmen, instead of Committee Chairmen, be invited to provide the necessary expertise for selected agenda items at ACME meetings, as ACFM had done in recent years. The **President** and **Chairman of the Consultative Committee** both pointed out that ACME, at its next meeting, definitely needed the participation of the two Chairmen in question in light of the important specific issues to be considered and because of their outstanding abilities. The **Delegate of the Netherlands**, agreeing with the previous remarks, suggested that experts other than the Committee Chairmen could be invited to future ACME meetings.

The **Delegate of Finland** pointed out that a Steering Group was involved in quality assurance of chemical measurements in the Baltic (C.Res.1993/2:18) and assumed that the Marine Chemistry Working Group was responsible for such work throughout the entire ICES area. The **Environment Secretary** acknowledged that, in fact, the Working Group was doing that on a regular basis both in the Baltic and elsewhere in the ICES area. She also indicated that a further complication stemmed from most of the work on quality assurance of chemical measurements previously done by ICES having been taken over by the Commission of the EC's QUASIMEME (Quality Assurance of Measurements in the Marine Environment) programme, even though the same Member Country scientists were still involved, but now with CEC funding. The **Delegate of Finland** pointed out that not all ICES Member Countries belonged to the EC, and the future of quality assurance within ICES should be considered by the Working Group. The **Delegate of the Netherlands** agreed that the Marine Chemistry Working Group needed to broaden the scope of its activities beyond the traditional analytical methods for determining trace contaminants and give more attention to quality control objectives, process studies, and the like.

The various recommendations originating from ACME were adopted by the Council as C.Res.1993/1:2, 2:6:22 (jointly with ACFM), 2:7 - 2:7:8, 2:7:9 - 2:7:10 (both jointly with Mariculture), and 4:1 - 4:3.

ACFM

The **Delegate of the United States**, although highly supportive of the Working Group on Long-Term Management Measures (C.Res.1993/2:6:15), felt that the Group's terms of reference overlapped with those of several other Groups (e.g., Multispecies Assessment Working Group, Working Group on Methods of Fish Stock Assessment, Study Group on the North Sea "Plaice Box") and were so varied that it might be impossible for the Group to have a substantive discussion specifically on long-term management measures. The **President** agreed that the Working Group Chairman should be advised by the Secretariat to set some work priorities and sharpen the focus of the terms of reference for the Group's meeting in January 1994.

The various recommendations originating from ACFM were adopted by the Council as C.Res.1993/2:6 - 2:6:21 and 2:6:22 (jointly with ACME).

Other Items

Following a proposal by the **Delegate of Iceland**, it was agreed that the Secretariat should explore the possibility of using e-mail as a more cost-effective alternative for holding meetings of certain Working/Study Groups or to facilitate working by correspondence. The Secretariat should investigate the extent of e-mail usage in Member Country institutes and prepare guidelines for standards and formats to be followed in the use of e-mail for this purpose.

The **Delegate of the United Kingdom**, noting an escalation in the number of Groups and meetings in the last several years, was concerned that Groups may find it increasingly difficult to complete their assigned terms of reference because of an inability to attract the participation of sufficient scientific expertise due to financial constraints as well as the demands of other commitments. He viewed this general problem as a topic for the strategic discussions by Delegates at next year's Statutory Meeting.

The **Delegate of Ireland** drew attention to three recommendations from Theme Session T on "Computers in Fishery Research" which had not been included in the package of recommendations submitted by the Consultative Committee. The Council agreed to refer those recommendations (see report on that Theme Session on page 159) to the 1994 mid-term meeting of the Consultative Committee for appropriate consideration.

Agenda Item 14 ACFM MATTERS

There were no issues raised concerning ACFM that were not covered under other agenda items.

Agenda Item 15 ACME MATTERS

There were no issues raised concerning ACME that were not covered under other agenda items.

Agenda Item 16 82ND (1994) AND 83RD (1955) STATUTORY MEETINGS

The **General Secretary** reminded Delegates that the 1994 Statutory Meeting would be held in St. John's, Newfoundland, Canada from Tuesday 20 September - Wednesday 28 September, which represented a departure from the usual start on a Thursday and finish on a Friday owing to the dates when meeting facilities would be available in St. John's.

The **Delegate of Canada** indicated that his country would be pleased to welcome ICES to St. John's in 1994. He drew attention to an information brochure in the packet of material which he had circulated to Delegates, and referred to the opening paragraph which said, "For almost 500 years the city has been visited by explorers, adventurers, soldiers, and pirates". He expressed the hope that ICES would be part of that group of explorers and adventurers. He complimented the Irish hosts at this year's meeting for having set a very high standard for hospitality and organization arrangements, and pledged that the organizers in Canada would do everything in their power to try to meet that standard.

The **President** thanked the Delegate of Canada for his kind words and asked the Council to endorse the dates and venue for the 1994 Statutory Meeting, which it did.

[Note: The dates for the 1994 Statutory Meeting were subsequently changed to 22 (Thursday) - 30 (Friday) September as a result of facilities becoming available at the Radisson Plaza Hotel in St. John's on 29-30 September.]

The **General Secretary** reported that the Bureau was of the opinion that the 1995 Statutory Meeting should be held in Copenhagen, where it had not been held since 1990. Invitations had not been received from any Member Country. If the present schedule were maintained, the dates would be 21-29 September. Moltkes Palæ continued to be the most convenient and economical venue in Copenhagen, but alternative venues could be explored. The Council approved this proposal.

Agenda Item 17 ANY OTHER BUSINESS

The **Delegate of Norway** proposed that the Council, when considering the report and recommendations from the Consultative Committee, should avoid using time to discuss the various Subject/Area Committee reports or the background to the various recommendations, but should spend that time discussing matters under other agenda items, preferably those of a scientific nature. The **President** welcomed this suggestion, urged Delegates to read as many of the reports and background information in advance of the presentation of the Consultative Committee's report during the final two sessions of the Delegates meeting, and agreed that more time should be devoted to discussing science rather than the administration of the science.

The **Delegate of the United Kingdom** distributed a complimentary copy of the recently published book *Origins and Development of the Fisheries Laboratory at Lowestoft*, written by Arthur Lee, former Director of the Laboratory. The book traced the history of research at Lowestoft from the beginning of the century to about 1980 and described the development of marine science in the ICES context. Additional copies could be obtained by writing to the Laboratory.

The **Delegate of Russia** expressed his appreciation to all Delegates for their kind understanding of the current circumstances in his country.

The **President** drew attention to two items of information circulated by Dr Paul Hillis of the Irish Fisheries Research Centre pertaining to the European Association of Fisheries Economists (EAFE) and the International Institute of Fisheries Economists & Trade (IIFET), organizations with which some fisheries scientists had established good working links and with which ICES might need to establish closer working relationships in the future.

The **President** conveyed his farewell and deep and sincere thanks to Dr Emory Anderson, the outgoing General Secretary, and Prof. Chris Hopkins, the outgoing Chairman of the Consultative Committee, for their splendid work and initiatives and the capacity to respond quickly under pressure. Prof. Hopkins would be taking over as General Secretary in early January and would overlap with Dr Anderson for several weeks to ensure a smooth transition. He also expressed good wishes to Dr Colin Bannister, the incoming Chairman of the Consultative Committee.

The **President** drew attention to the impending retirement in 1994 of Dr David Garrod as Director of the Fisheries Laboratory at Lowestoft. This would be his last meeting as an ICES Delegate. He recalled Dr Garrod's long-standing involvement in ICES and other international fisheries and marine science activities in various capacities, expressed gratitude for his many contributions, and wished him well in his retirement.

The **President** thanked everyone for their help and participation, wished them a safe journey home, expressed the hope to see them during the coming year, especially in St. John's in September, and adjourned the meeting.

DOCUMENTS

Del:1		Final accounts for Financial Year 1991/1992
Del:2		Progress report on administration
Del:3		Report on Activities, 1993
Del:4		Estimated accounts for the Financial Year 1992/1993
Del:5 Revised		Revised draft Budget for Financial Year 1993/1994
Del:6 Revised		Revised draft Forecast Budget for Financial Year 1994/1995
Del:7		Elections and appointments by the Council at the 81st Statutory Meeting
Del:8		Request for reduced number of shares by Russia
Del:9	Environment Secretary	Progress in the work of the North Sea Task Force
Gen:4 Ref. A+Del		Report of mid-term meeting of Consultative Committee
Gen:6 Ref. A+Del		Report of the Bureau Working Group on Strategic Planning for Scientific Cooperation and Advice
Gen:7	P. Mälkki	The ICES Committee structure - discussion paper
Uncoded	J.G. Shepherd	ICES in the future

REPORT OF FINANCE COMMITTEE

Chairman: Mr O. Cendrero
Rapporteur: General Secretary

The Committee met on Friday 24 September from 09.05 - 13.25 hrs. All members were present. The First Vice-President, representing the Bureau, the President (part-time), the General Secretary, Ms J. Andersen-Rosendal, Ms I. Lützhøft, and the Secretary of NASCO (part-time) also attended the meeting.

Agenda Item 1 APPROVAL OF AGENDA

The draft Agenda was adopted as presented. The Chairman indicated that he intended to handle Agenda Item 7 first since it contained several difficult matters which needed to be resolved before the remaining items could be adequately addressed.

Agenda Item 2 AUDITED ACCOUNTS FOR FINANCIAL YEAR 1991/1992

The Chairman drew attention to the Audited Accounts and Balance Sheet for 1991/1992 contained in Doc. C.M. 1993/Del:1. The Committee had no questions or comments and approved and signed the Accounts and Balance Sheet.

Agenda Item 3 ESTIMATED ACCOUNTS FOR FINANCIAL YEAR 1992/1993

The Committee had only several minor questions on the Estimated Accounts for Financial Year 1992/1993 (Doc. C.M. 1993/Del:4).

In response to an inquiry about the Computer Equipment Fund, which currently had a balance of about DKK 510,000, the General Secretary pointed out that he was recommending that any excess of income over expenditure in the current year be transferred to the Fund in order to cover the cost of routine replacements or additions to the computer network purchased several years ago. He briefly explained that one such need was to upgrade the two existing HP9000/400 series Unix workstations to machines in the HP9000/700 series in order to take advantage of newer and less expensive software available only on the 700 series and to achieve a significant improvement in computing speed. The cost to make this upgrade would be about DKK 225,000, but savings in less expensive software and service contracts would neutralize this cost within 2-3 years. He requested that the Committee recommend to the Council that the Secretariat be authorized to purchase the equipment in question before 31 December 1993 (in order to take advantage of a special offer) and that the necessary funds be taken from the Computer Equipment Fund on the understanding that savings in the ADP budget in the next 2-3 years be used to replenish the Fund.

The Committee approved the Estimated Accounts and recommended their acceptance by the Council. The Committee also agreed to recommend that any excess of income over expenditure in the current year be transferred to the Computer Equipment Fund and that the Secretariat be authorized to use DKK 225,000 from the Fund to purchase the new workstations as requested by the General Secretary.

Agenda Item 4 BUDGET FOR FINANCIAL YEAR 1993/1994

The Committee had no major questions on the draft Budget for 1993/1994 (Doc. C.M. 1993/Del:5). Attention was drawn, however, to the fact that the contribution from the Commission of the EC was fixed in ECU, which had led to a shortfall in the contribution because of an unanticipated change in the DKK/ECU exchange rate. The General Secretary noted that he had contacted the Commission on this matter and requested that the existing Agreement on Cooperation be amended to fix the contribution in DKK rather than ECU. The Committee recommended that further communication be undertaken with the Commission on this matter.

The Committee approved the draft Budget for 1993/1994 and, in light of the accession of Latvia to the Council's Convention, agreed that it be revised to reflect a contribution of DKK 50,000 from Latvia, with this amount distributed as appropriate on the expenditure side to account for additional expenses for ACFM, ACME, and office expenses. Since Estonia had not yet officially become a member, it was agreed not to include any contributions from that country. The Committee recommended that such a revised draft Budget be adopted by the Council.

Agenda Item 5 FORECAST BUDGET FOR FINANCIAL YEAR 1994/1995

The Committee approved the draft Forecast Budget for 1994/1995 (Doc. C.M. 1993/Del:6), but in light of the accession of Latvia to the Convention and the Committee's recommendations to the Council regarding a reduction in the number of shares held by Russia (see Agenda Item 7.1) and in the contribution of NASCO (see Agenda Item 7.2), agreed that a revised draft Forecast Budget should be prepared to reflect these changes in income and the appropriate changes in expenditure to

cover anticipated costs associated with the membership of Latvia. Since Estonia had not yet officially become a member, it was agreed not to include any contributions from that country. The Committee also agreed to present two options for income in 1994/1995, one with 4 shares for Russia and one with 3 shares.

The Committee recommended that a revised draft Forecast Budget for 1994/1995 be adopted by the Council.

Agenda Item 6 AUDITING OF THE COUNCIL'S ACCOUNTS

The Chairman and General Secretary reported that the Secretariat's relationship with the Danish Auditor General's office had deteriorated in the previous 6-8 months following questions raised by the auditors about a) procedures used when selling surplus computer equipment and b) a change in 1992 in the pension scheme for some staff members from an employer-oriented plan to an employee-oriented plan, which was fully legal and had the approval of the Bureau. There had been an exchange of letters between the Auditor General's office and the General Secretary in an attempt to explain and resolve the matter. The Danish Delegate (Mr Nielsen) had been involved as well. A meeting in mid-June with the auditors, Mr Nielsen, the President, General Secretary, and relevant Secretariat staff had appeared to eliminate some of the misunderstandings and tension, and a subsequent letter from the Ministry of Taxation had confirmed that the new pension arrangement was consistent with Danish law. ICES had agreed to make appropriate amendments in the statements of pension agreement between each individual staff member and the Council to take account of the concerns expressed by the auditors. However, in early September, the Auditor General had still appeared unwilling to accept this ruling and had insisted on including a statement in the Audited Accounts for 1991/1992 (Doc. C.M. 1993/Del:1) suggesting impropriety on the part of the Secretariat. The matter had been considered by the Bureau in June, at which time it was agreed that the matter should be monitored for the coming year. However, at its 22 September meeting, the Bureau had indicated that it considered the present situation totally unacceptable and had decided that complaints should be raised to a higher level in the Danish Administration. The General Secretary had recommended to the Bureau, and now recommended to the Committee, that consideration be given to engaging a private accounting firm which could audit the accounts and also give financial advice (a service which the Auditor General's office appeared incapable of providing).

The Committee was in general sympathy with the problem and agreed that the Danish Delegates should investigate the matter further before any recommendation should be made to engage a private accounting firm [which would require a change in Rule 20(vii) of the Rules of Procedure].

Agenda Item 7 MATTERS REFERRED TO COMMITTEE BY BUREAU OR COUNCIL

7.1 Request for Reduced Number of Shares by Russia

The Chairman reviewed Doc. C.M. 1993/Del:8 which contained a request from Russia for a reduction from 4 to 2 shares in the Council's scheme of national contributions. He noted the background information on the present scheme contained in the document and reminded the Committee that it had taken the Council a painstaking 3-4 years in the 1970s to finally agree on the scheme. He had sympathy for the request by Russia in light of the breakup of the former USSR, and suggested that a reduction might be appropriate after both Latvia and Estonia were members of the Council and were each contributing a full share.

The Committee noted that the entry of any new Member Country resulted in budget increases for the Council (e.g., participation on the Advisory Committees, reports and documents, communication and correspondence) and recalled the principles on which the current scheme of shares was based:

a) Each Contracting Party will have one share in light of the general services provided by the Council to all its members.

b) Each Contracting Party will have ½, 1, 2, or 3 additional shares, taking into account the magnitude of the Party's involvement in Council activities as well as population, gross national product, fisheries, and marine science activities in the ICES area.

The Committee was informed that Russian fisheries in the Baltic Sea now had catches only about 22% (about 40,000 t) of the level taken by the former USSR. Information was not available on the current level of catches elsewhere in the ICES area (e.g., Barents Sea), although it was acknowledged that some decreases had occurred. It was pointed out, however, that fishing fleets and catches in other Member Countries had also declined since the mid-1970s when the current scheme had been adopted. Attention was drawn to the financial difficulties in Russia, but the Committee agreed that its recommendation to the Council on this matter should be based on the underlying principles in the current scheme of shares and not on the current economic situation, which was also a matter of concern in other Member Countries. The Committee felt that it was premature to consider revising the current scheme of shares until

some of the larger issues confronting the Council were addressed and resolved.

The Committee agreed to recommend to the Council that the number of shares held by Russia be reduced from 4 to 3 beginning in Financial Year 1994/1995.

7.2 Request for Reduced Contribution by NASCO

The Chairman introduced this item by pointing out that NASCO had expressed concern that its contribution to ICES was too high relative to those paid by other "customers" in comparison to the costs incurred by the Council and had requested that its contribution be reduced so that the proportion of costs recovered by the NASCO contribution would be no greater than for any other "customer". There had been an exchange of correspondence on this matter between the Secretary of NASCO and the General Secretary, and the Secretary had been invited to attend the meeting of the Committee to present the views of his organization.

Dr M. Windsor, Secretary of NASCO, noted that this matter had become one of principal concern to his organization's Finance and Administration Committee. NASCO felt that it was being treated unfairly since some contributions represented only as little as 22% of actual costs while NASCO had been paying 100% or more of costs. This was in direct conflict with the understanding between ICES and NASCO in 1984, which had been reaffirmed by the previous General Secretary in 1988, that the contribution should be only 20-25% of actual costs. Because of this disparity of treatment, Dr Windsor had been instructed by his organization to convey these views to ICES and seek a fair and equitable arrangement which would ensure that NASCO would not be paying a higher proportion of costs than the other ICES "customers". He proposed that a fair solution would be a contribution based on the average percentage level of the other "customers", which was about 47%. If the Council eventually achieved 100% recovery of costs from its other "customers", NASCO would willingly do so as well, but until equity was reached, the NASCO contribution should be reduced substantially.

The President reported on a discussion held the previous day with Dr Windsor and the General Secretary on this matter. An opinion occasionally expressed within NASCO, as well as other commissions, was that many countries paid twice to ICES, once through national contributions and again through the commission contribution. However, Member Country contributions were intended to cover the Council's core expenses for the promotion and coordination of scientific activities, whereas the "customer" contributions were intended to cover the extra costs associated with the provision of scientific advice. Although there clearly was an obligation on the part of the Council to adhere to the terms of its original agreement with NASCO, costs and conditions had changed in the ensuing 10 years and the Council was now moving towards a policy of 100% cost recovery from its "customers". NASCO viewed a significant reduction in its contribution as fair and equitable, but the Council viewed 100% cost recovery from all "customers" as fair and appropriate. Since it might take three or more years before the Council could successfully negotiate higher contributions from its other "customers" and recognizing the need to be fair to NASCO in the interim, a possible solution might be to reduce the NASCO contribution in 1994/1995 to the same percentage level as the OSPARCOM contribution (84% of costs) in 1993/1994. Such a reduction would be followed by a gradual return to 100% cost recovery over a subsequent period of about three years in parallel with entering into negotiations with the other "customers" to raise their contributions to or near the 100% level.

The General Secretary briefly summarized Bureau Doc. No. 906 ("NASCO financial contribution to ICES"), which had been considered at the 22 September Bureau meeting. This document contained some background information on the present problem with NASCO, the basis for the current contribution, and the actual costs incurred by the Council in 1992/1993 in providing scientific advice to NASCO. The actual costs included a) staff salary costs as recorded by the new timekeeping system implemented in the Secretariat on 1 November 1992, b) ACFM expenses, c) travel costs, d) postage costs for reports, and e) office overhead (53.2% of the staff salary costs). These costs totalled DKK 274,401 compared to a contribution of DKK 274,500.

The Committee was in agreement with the proposal of the President to reduce the NASCO contribution in 1994/1995 and to negotiate increases in the contributions of other "customers" to the 100% level. Several points relative to the costs to be assigned to "customers" were identified for further review and clarification by the Council.

Office overhead expenses could conceivably be higher than 53.2% of staff salaries, as currently estimated by the Secretariat. The figure of 53.2% had been derived as the sum of the Secretariat's office and ADP expenses, plus the salaries of the ADP and printing shop personnel (which were not included in the staff salary costs indicated above), divided by the total Secretariat staff salary (including pension) cost (less the ADP and printing shop salaries).

A careful examination and definition of the Council's core expenses and advisory or service expenses would be needed before the Council could realistically undertake negotiations with its "customers" for increased contributions. The information provided by the new timekeeping system in the Secretariat would provide the

only real basis for such an analysis. A clearer understanding of the costs to be borne by Member Countries and by "customers" would be needed.

The principal role and function of ICES (i.e., to encourage, promote, and coordinate cooperative marine research activities in the Member Countries) needed to be communicated better to the "customers", many of which (including NASCO) viewed it as primarily to provide scientific advice for management.

The General Secretary reminded the Committee that the actual costs for providing services to NASCO in 1992/1993 (DKK 274,401) could be expected to increase in 1993/1994 and 1994/1995 by the same percentage as the Council's budgets for those two financial years (i.e., reflecting inflationary and other increases in the Council's operating costs). The cumulative increase over these two years of about 8% (to about DKK 297,000) would imply that the NASCO contribution, if held constant during that time, would automatically decrease to about 92% of actual costs.

Dr Windsor indicated that NASCO would accept having its 1993/1994 contribution maintained at the 1992/1993 level and might accept a reduction to about 84% of costs in 1994/1995, but a reduction of only that amount would not satisfy his organization's mandate to him.

The Committee acknowledged that a solution was required on the NASCO contribution which would be satisfactory to both sides. Negotiations with other organizations for increased contributions would be difficult, and it would be desirable to have formal Memoranda of Understanding with all of them which would contain mechanisms for fixing/changing contributions.

The General Secretary explained that the percentages of cost vs contribution which had been determined for the various "customer" organizations several years ago had only been estimates, and that those amounts were subject to change when actual costs were eventually obtained from the data collected by the Secretariat's timekeeping system. He indicated that it had been relatively easy to determine the costs of providing advice for NASCO, but that it would be much more difficult in cases where there were overlapping requests for advice from several organizations as well as Member Country governments.

The Committee agreed that considerable work remained before negotiations with the various "customers" could be undertaken. The first step would be to derive actual costs incurred in 1992/1993 for all the various "customers", a task which could not be completed until early 1994. It would then be necessary for the Committee to examine this information, identify and resolve any problems associated with these costs, and decide on an appropriate approach to recommend to the Council.

The Committee felt that a policy of 100% cost recovery from the "customer" organizations should be recommended to the Council. It was also agreed to recommend to the Council that the NASCO contribution for 1994/1995 should be set at a level corresponding to 84% of the estimated costs for that year.

7.3 Status of Feasibility Study on Product-Oriented Budgeting System

The General Secretary presented a brief summary of the timekeeping system that had been implemented in the Secretariat on 1 November 1992. This had been in response to a recommendation from the Finance Committee at the 1992 Statutory Meeting that a feasibility study be initiated to explore the possibility of establishing a product-oriented budgeting system for the Council. The computerized timekeeping system had been introduced for assigning and recording the working hours of each member according to clients, projects, and activities. Time sheets for this purpose were maintained and submitted on a weekly basis by each employee. Hourly salary (plus pension) costs for each employee facilitated the easy determination of costs for individual clients, projects, and activities. Several sample summary tables were presented to illustrate the capabilities of the system.

The Committee congratulated the Secretariat for an excellent job in selecting and implementing a timekeeping system so quickly after the 1992 Statutory Meeting. It would now be easy to compare costs for the various Working and Study Groups, and the new system would provide a good basis for costing the services provided to the various "customer" organizations. Some refinements to the system would be required based on the experiences obtained from the first year of operation. The Committee agreed that information from the full 1992/1993 Financial Year would be required before any useful results could be obtained for use in future negotiations regarding financial contributions by "customers".

Agenda Item 8 ANY OTHER BUSINESS

In response to a question regarding long-term improvements to the Headquarters facilities, a matter that had been raised at the 1992 meeting of the Committee, the General Secretary reported that provision had been made in both the draft Budget and draft Forecast Budget for necessary funds to begin making the needed improvements. He noted that new furniture in the Bureau Room and lunchroom had already been purchased and plans were underway for other improvements.

There being no other business, the Chairman thanked the Committee members for their attention and cooperation and adjourned the meeting at 13.25 hrs.

DOCUMENTS

Fi:1	Agenda for the Finance Committee
Del:1	Final accounts for Financial Year 1991/1992
Del:4	Estimated accounts for the Financial Year 1992/1993
Del:5	Draft Budget for Financial Year 1993/1994
Del:6	Draft Forecast Budget for Financial Year 1994/1995
Del:8	Request for reduced number of shares by Russia
Bureau Doc. No. 906	NASCO financial contribution to ICES

REPORT OF PUBLICATIONS COMMITTEE

Chairman: Mr J. Sigurjónsson
Rapporteur: Mrs J. Rosenmeier

The Committee met on Monday 27 September beginning at 09.00 hrs. All members were present, together with Mr J. Møller Christensen, representing the Bureau, the General Secretary, Mr J.W. Ramster, Assistant Editor of the *ICES Journal of Marine Science*, Dr A. Richford of Academic Press, and Mrs J. Rosenmeier.

Agenda Item 1 APPROVAL OF AGENDA

The draft Agenda was accepted. The Chairman announced that Agenda Item 11 would include a discussion of a manuscript entitled "Guide to Premaxillae and Vertebrae of North Sea Fish".

Agenda Item 2 REVIEW OF PUBLICATION ACTIVITIES IN 1992/1993

The General Secretary presented Doc. C.M. 1993/Pub:2 and briefly summarized publication activities during the year, noting that a number of them would be discussed under subsequent agenda items. Three volumes in the *ICES Marine Science Symposia* series had been published since the last Statutory Meeting, and others were in various stages of preparation. Following the resignation last year of the Scientific Editor (and Convener) of the proceedings of the Symposium on "Shellfish Life Histories and Shellfishery Models", held in June 1990, the new Co-Editors had been engaged in tracking and editing the papers presented. The Committee was pleased to note that steady progress was being made in preparing the material for publication. An eighth number in the *ICES Cooperative Research Report* series had been published since the report was prepared: No. 194, "Atlas of North Sea Fishes", issued in September. The Secretariat had recently assumed responsibility for handling not only the technical editing of the *North Sea Quality Status Report*, as earlier agreed, but also for supervising the final production of the volume on behalf of OSPARCOM. In spite of numerous attempts to remedy the situation, timely publication of *ICES Fisheries Statistics* continued to be a problem, owing to the late submission of data by some countries. The Statistics Committee had prepared a recommendation urging the Council's Contracting Parties to take steps to improve and correct reporting procedures for fisheries statistics, including among others, earlier submission of data. Further amplification was provided by the Chairman of the Consultative Committee. It was hoped that presenting the problem at the highest level would increase the likelihood of arriving at a satisfactory conclusion. In the course of the ensuing discussion, questions were raised regarding both the validity of continuing to publish fisheries statistics in the current format as well as the reliability of the data. It was pointed out that similar concerns had been voiced for some years, but that it appeared that there was still a need for the material published in its present form. Further, in view of the difficulties inherent in trying to change the working procedures of other countries, it was possible that to a certain extent, late submission of some data would continue to be a problem. In general, the Committee felt that such issues as reliability of the statistics fell beyond its remit and that it would be most appropriate to concentrate on trying to ensure that material for publication was submitted as quickly as possible. The Committee shared the concern of the Statistics Committee and wished to support the latter's initiative in calling attention to the various aspects of the problem at issue.

Agenda Item 3 SALE OF ICES PUBLICATIONS DURING THE LAST THREE YEARS

Doc. C.M. 1993/Pub:3 was presented by the General Secretary, who explained the drop in income between 1990/1991 and 1991/1992, following several years of steadily increasing income. The fall in sales seen in the figures reported by C.A. Reitzel, the Council's bookseller, was accounted for by the *ICES Journal* and *ICES Marine Science Symposia.* During the intervening period, the *Journal* had been taken over by Academic Press, and only one volume of *ICES MSS* (a small one) had been issued in 1991/1992, in contrast to the previous year, when two larger volumes had been issued as well as reflecting continued sales of the volume on the early life history of fish; it was also possible that Reitzel's loss of the *ICES Journal* had resulted in reduced promotional effort. Direct sales from the Secretariat, on the other hand, had increased so much that the handling of invoices alone had required the reallocation of one staff member's time. A major factor was the assistance provided by Academic Press in agreeing to distribute an information sheet on ICES publications along with its advertisements for the *ICES Journal* that were sent to some 16,000 addresses.

Agenda Item 4 ICES JOURNAL OF MARINE SCIENCE

Item 4.1 Editors' Report

Prof. J.H.S. Blaxter presented Doc. C.M. 1993/Pub:4 and called the Committee's attention to the welcome development seen in the higher rate of submission of pa-

pers, which had increased by 40% compared with the same period last year. The rejection rate of approximately 13% was still low, but it was important to recognize that the standard of the manuscripts received was generally very good. The Editors spent a great deal of time working with authors to improve the manuscripts, and it was gratifying to note that the *ICES Journal* continued to have a reputation for publishing papers of a commendably high level. With respect to increasing the frequency of publication to six numbers per volume, it would be difficult to predict when this could be effected, in spite of the increase in submissions, which was expected to continue. Mini-Symposia and Theme Sessions were potentially valuable sources of good material, but it was important to establish and develop strategies for identifying the best papers. The Chairman of the Consultative Committee concurred, referring to a discussion during the mid-term meeting of the Bureau that concerned the importance of finding ways to encourage authors who presented suitable papers at Statutory Meetings to submit them as a matter of routine for possible publication in the *ICES Journal.* Prof. Blaxter and Dr Richford agreed to draft some guidelines and suggestions for Committee Chairmen and Mini-Symposia and Theme Session Conveners, to be submitted to the Consultative Committee for review, for evaluating material from the standpoint of what would be best suited (as well as wholly unsuited) to publication in the *ICES Journal.* Members of the Committee agreed that it would be of mutual benefit to all parties if the chairmen could be encouraged to play an active part in identifying the best papers at an early stage, which would also be an incentive to authors to strive to meet the highest standards, with an eye to possible publication.

Item 4.2 Publisher's Report

Dr A. Richford referred to Doc. C.M. 1993/Pub:5 and presented updated figures on the number of institutional and personal subscriptions to the *ICES Journal.* The Committee was pleased to note that the figures for December 1992, which had fallen slightly by June 1993, had now been surpassed and were expected to rise by December 1993. A sharp drop was noted in the ISI rating of the citation impact of the *ICES Journal,* which could not be immediately explained but would be explored (it could not be entirely excluded that it was an error); caution should be exercised in evaluating such figures. The importance of continuing to increase the flow of good material was stressed as a factor in enhancing the position of the journal on all counts. With respect to the joint account, the *ICES Journal* had now reached the break-even point, reflecting the increase in size and subscription prices. The large cumulative debit which had built up would be carried forward until it was eliminated by a positive balance.

Agenda Item 5 ICES IDENTIFICATION LEAFLETS FOR PLANKTON

Doc. C.M. 1993/L:12 reported that one manuscript had been submitted to ICES for publication and that others were in various stages of preparation. In addition it was noted that several older leaflets on zooplankton were in need of revision or replacement. The Editor would welcome suggestions for new leaflets as well as volunteers to prepare them. Members of the Committee wished to record their appreciation to the Editor for the contribution he has made to maintaining and furthering the high standards that characterize this series.

Agenda Item 6 ICES IDENTIFICATION LEAFLETS FOR DISEASES AND PARASITES OF FISH AND SHELLFISH

The Editor's Report (Doc. C.M. 1993/F:16) referred to discussions held during the 1993 meeting of the Working Group on Pathology and Diseases of Marine Organisms. After careful consideration it had been decided that the series should be continued and presented in its existing format. However, it had been agreed that the leaflets should be published in smaller units than the ten which had formerly constituted a publishable set but which now constituted a hindrance when the number could not be met. Further, it had been decided that consideration should be given to replacing older leaflets with updated material. The Editor was continuing to work on seven leaflets which still needed to be translated into French.

Agenda Item 7 TECHNIQUES IN MARINE ENVIRONMENTAL SCIENCES

Doc. C.M. 1993/E:2 reported that No. 17, on nutrients, and No. 18, on contaminants, would soon be published. In addition, a third number, a training guide for the identification of diseases and parasites of fish in the North Atlantic, had been submitted by the authors in a preliminary version and was expected in a final version. It had been proposed, and the Committee agreed, that the title of the series should in future be preceded by "ICES" to bring it into line with the titles of the other ICES publication series.

Agenda Item 8 PUBLICATION OF ICES SYMPOSIA PROCEEDINGS

The General Secretary presented Doc. C.M. 1993/Pub:6 and reviewed the general background for the document, referring to the request of the Bureau at its June 1993 mid-term meeting that it be considered and evaluated by the Publications Committee, "particularly to examine whether or not the Council's ability to communicate and disseminate the proceedings of Symposia

would be improved or diminished by publishing them as extra issues of the *ICES Journal*".

In considering the possible advantages and disadvantages, it was noted that a serious difficulty appeared to lie in the necessity of establishing two categories of ICES Symposia: those that would merit publication in the series and those that would not, owing to size constraints imposed by standard publication and subscription procedures. Dr Richford explained the reasons which would dictate such constraints and emphasized that Academic Press would do all it could to accommodate the Council's needs, including accepting the possibility that the number of pages allocated to Symposia proceedings could vary within a range (such as 250-500) in alternating years, so long as some regularity in the pattern could be established.

Strong points in favour of publishing proceedings in the *ICES Journal* were the outstanding expertise of the present editorial team and the excellent working relationship with Academic Press. In addition, the Committee explored in detail the possibilities for continuing to include material such as overviews, abstracts, and other work that helped to make up the full picture of a Symposium but which might not ordinarily be considered appropriate to, and up to the standards of, this publication. Consideration was also given to such questions as the eventual division of responsibility among the various editors, funding possibilities through outside contributions and registration fees, the cover design, the nature of continuing links with the Secretariat, and the desirability of being able to make a decision on the basis of merit rather than technical considerations. Dr Richford pointed out that if a decision were made in favour of including proceedings in the *ICES Journal*, the earliest possible date of implementation would be 1995; the decision would have to be made by no later than May 1994 to allow Academic Press to prepare its advertising for subscribers for the following year.

In the Committee's view, the detailed discussion of this complex issue and its implications had been most worthwhile, and it was agreed to recommend to the Council that Symposia proceedings should be published as extra issues in the *ICES Journal* and that the necessary planning and preparation be initiated so that this could begin in 1995, with the 1994 Symposium to be used as the first test case.

Agenda Item 9 RECORDING OF RARE FISHES FROM THE ICES AREA

Doc. C.M. 1993/Pub:7 was presented by the Chairman of the Consultative Committee, who briefly reviewed the background for the proposal to publish regular recordings of rare fish species in the *ICES Journal*, which was first made in 1991. Since that time, additional information had been furnished, detailing the plans and outlook for publication, in response to requests for more specific material which would make it possible to reach a conclusion. The Consultative Committee had asked Dr G.W. Potts and Dr S. Swaby, together with the Chairmen of ACFM and ACME, and the Fishery Secretary and Fisheries Assessment Scientist of the ICES Secretariat to consider the key issues involved and report their views. The Committee expressed interest in the proposal, but it was agreed that a final decision could not be reached until the results of these views were known.

Agenda Item 10 MATTERS REFERRED TO COMMITTEE BY BUREAU OR COUNCIL

No specific issues were referred to the Committee for consideration.

Agenda Item 11 ANY OTHER BUSINESS

Prof. Blaxter presented a manuscript entitled "Guide to Premaxillae and Vertebrae of North Sea Fish" prepared by J. Watt, G.J. Pierce, and P.R. Boyle, under the auspices of the University of Aberdeen, to be considered for possible publication by the Council. Members considered the material to be of the greatest interest and value and were strongly in favour of publishing the manuscript. The Committee recommended that it be published in the *ICES Cooperative Research Report* series and that the details of handling it be left to the Secretariat to decide.

There being no other business, the Chairman thanked those present and adjourned the meeting at 12.40 hrs.

DOCUMENTS

Pub:1	Agenda for the Publications Committee
Pub:2	Publication activities in 1992/1993
Pub:3	Sale of ICES publications during the last three years

Pub:4	J.H.S. Blaxter, J.W. Ramster, and S.J. Smith	Report of the Editors of the *ICES Journal of Marine Science* for 1992/1993
Pub:5	A. Richford	Academic Press publisher's report for 1993: *ICES Journal of Marine Science*
Pub:6		Publication of ICES Symposia proceedings
Pub:7		Recording of rare fishes from the ICES area
E:2 Ref. Pub	J.F. Pawlak	Editor's report on *Techniques in Marine Environmental Sciences* for 1993
F:16 Ref. Pub	G. Olivier	Report of the Editor of the *ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish* for 1993
L:12 Ref. Pub	J.A. Lindley	*Identification Leaflets for Plankton*, Editor's report 1992/93

REPORT OF CONSULTATIVE COMMITTEE

Chairman: Prof. C.C.E. Hopkins
Rapporteurs: General Secretary, Environment Secretary, Fishery Secretary, and Oceanography Secretary

The Committee met during the following four sessions:

Wednesday 22 September	17.00 - 19.15 hrs
Monday 27 September	13.15 - 13.45 hrs
Tuesday 28 September	14.30 - 19.45 hrs
Wednesday 29 September	09.00 - 19.05 hrs

All members of the Committee as well as the General Secretary, Fishery Secretary, Environment Secretary, Oceanography Secretary, and incoming Chairman of ACFM were present at each session. The President, the new Chairman of the Mariculture Committee, and Ms I. Lützhøft attended the third and fourth sessions.

Agenda Item 1 ADOPTION OF AGENDA

The Chairman welcomed the members and drew attention to the reports to be considered under Agenda Item 5. The draft Agenda was adopted without change.

Agenda Item 2 ARRANGEMENTS FOR STATUTORY MEETING

Item 2.1 General Arrangements

The General Secretary pointed out that a record number (550) of announced participants would place a strain on meeting room space, paper supplies, pigeon holes, and the like. He drew attention to the general layout of rooms, particularly the use of colour codes to designate the meeting rooms, noting where changes had been made. He briefly mentioned the new items in the "ICES Shop" and the social activities involving the members.

Item 2.2 Review of Programme of Sessions and List of Papers

The General Secretary reported that the programme of sessions listed on the Blue Card was unchanged, except for an extra session of the Marine Environmental Quality Committee on Monday 27 September from 14.30 - 16.00 hrs (Purple Room). He also circulated information on the papers which had been withdrawn subsequent to the printing of the "Yellow List" (12) and on the papers which had not been received (about 125).

Item 2.3 Best Paper Presentation Award, Best Poster Presentation Award, and Young Scientist Award

The Chairman asked members to nominate candidates for the three awards from within their respective Committees and to turn in these nominations by no later than Monday evening to enable the President and him to make the selections. The winners would be announced and the prizes (framed certificates accompanied by small gifts) awarded at the Closing Session on Tuesday.

Agenda Item 3 CONDUCT OF STATUTORY MEETING

The Chairman reminded the Committee that the Report of the Mid-Term Meeting of the Consultative Committee (Doc. C.M. 1993/Gen:4) included a synthesis of a detailed discussion on the need to change the format of the Statutory Meeting. He also drew attention to Doc. C.M. 1993/Gen:6, the Report of the Bureau Working Group on Strategic Planning for Scientific Cooperation and Advice that had also addressed this issue. To ensure that all participants were informed of this discussion, and to foster discussions at the Committee sessions, these documents would be made available at the start of relevant Committee sessions.

Item 3.1 Instructions to Chairmen, Conveners, and Rapporteurs

The Chairmen informed the two new Chairmen (Biological Oceanography and Fish Capture Committees) of the need to familiarize themselves with necessary procedures. This would ensure the efficient conduct of their Committee sessions. It was particularly important that they acquired the services of a competent Rapporteur who could be trusted to submit a well-edited Committee report in good time. The General Secretary informed Chairmen that their Committee reports should be submitted to the Secretariat by Tuesday afternoon at the very latest. This would ensure that final drafts would be printed and duplicated well before the end of the final session of the Consultative Committee.

Item 3.2 Presentation of Papers

The Committee Chairmen were urged to maintain strict time-keeping in their sessions and to be very firm with presenters who attempted to use more time than they had been allocated. Some flexibility was possible, however, if the discussion merited this. For example, sessions could run into the coffee breaks if necessary.

A question was raised concerning the procedures for dealing with papers whose authors were not present. It was pointed out that such a decision lay entirely in the hands of individual Chairmen.

Item 3.3 Handling of Recommendations

Draft Committee recommendations had been prepared by the ICES Professional Secretaries for the Subject/ Area Committees based on recommendations in Working Group and Study Group reports. These had been compiled in a document entitled "Compendium of Recommendations from Working/Study Group Reports" (Doc. C.M. 1993/A:5). The Chairman of ACME pointed out that the recommendations concerning ACME Working Groups had been inadvertently included in this document and should be ignored.

Chairmen were asked to scrutinize carefully this document to ensure that all recommendations were correct and complete. Careful attention should be paid to recommendations not included in this document because of the late submission of some Working Group reports. Matters related to individual recommendations should be dealt with in close collaboration with the relevant Professional Secretary.

Chairmen were reminded that they must be able to defend each recommendation. The Chairman reiterated the importance of maintaining standards. In particular, Working/Study Groups not making progress nor providing convincing justification concerning their activities would be carefully examined and possibly dissolved.

Agenda Item 4 ELECTION OF NEW COMMITTEE CHAIRMEN

There was initially only the chairmanship of the Mariculture Committee scheduled to be filled by election at the Statutory Meeting. However, since the current Chairman of the Consultative Committee (in the second year of a three-year term) was appointed as the next General Secretary, it was necessary to elect a new Chairman. This election, held during the Committee's second session, resulted in the current Chairman of the Shellfish Committee (also in the second year of a three-year term) being selected as the next Chairman of the Consultative Committee. This, in turn, necessitated the election of a new Chairman of the Shellfish Committee.

The results of these various elections were as follows:

Consultative: Dr R.C.A. Bannister (UK) replacing Prof. C.C.E. Hopkins (Norway),

Mariculture: Dr R.H. Cook (Canada) replacing Prof. H. Ackefors (Sweden),

Shellfish: Mr M. Héral (France) replacing Dr R.C.A. Bannister (UK).

The Chairman and President both expressed thanks and appreciation to the outgoing Chairmen of ACFM and the Mariculture Committee for their efforts on behalf of ICES during their terms of office and presented them with small gifts of appreciation.

Agenda Item 5 REPORTS OF GROUPS REPORTING TO THE CONSULTATIVE COMMITTEE

Item 5.1 Inter-Committee Recruitment Group

The Inter-Committee Recruitment Group (IRG) held a brief meeting on 23 September, with six of the members, including the Chairman (Dr M. Sissenwine), being present. The Group had concluded that it no longer had any useful function to perform, given the now-established activities in the Cod and Climate Change programme (CCC) and the smooth running of the Working Group on Recruitment Processes. The Committee, therefore, agreed to the suggestion by the Group that it be dissolved.

Item 5.2 Working Group on Cod and Climate Change

The Chairman drew the attention of the Committee to the report of the Working Group on Cod and Climate Change (Doc. C.M. 1993/G:2). The Committee was very satisfied with the progress made by the Working Group, and extended its gratitude to its Chairman, Dr K. Brander, for his very hard work in ensuring its success. It was noted that the report had been issued jointly as an I-GLOBEC report, which would help to promote the work of the Group to a very wide audience. The Group was clearly integrating all relevant aspects of the work required to ensure that the Cod and Climate Change programme would meet its objectives, and this had been significantly helped by the wide-ranging participation at the meeting which had been enhanced by the co-sponsorship with I-GLOBEC (involving SCOR, IOC, and PICES).

The Committee noted that the recommendations of this Working Group had been dealt with by the Demersal Fish Committee, which had considered and approved its recommendations for three Workshops in 1994. The Committee agreed that such a programme would maintain the present momentum and provide a good framework for developing the scientific requirements and data needs for the CCC. In spite of the lead taken by the Demersal Fish Committee, it was felt that the cross-disciplinary needs of this Working Group were so great that the Consultative Committee should, for the time being, remain its parent. The cross-disciplinary nature of this Group also meant that a number of Committees in ICES would wish to review the work of this Group. This would include review by various Subject/Area Committees as well as ACFM, ACME, and the Consultative Committee.

Item 5.3 Study Group on Long-Finned Pilot Whales

In introducing the report of this Study Group, which at present reported directly to the Consultative Committee, the Chairman explained that the Committee would primarily be discussing the general and logistic aspects of the report, and that the scientific results would mainly be reviewed by the Marine Mammals Committee, and by ACFM at its autumn 1993 meeting.

The Chairman welcomed the Chairman of the Study Group and asked him to present his report.

The Study Group meeting had been very constructive and a large amount of material had been reviewed, including working papers written specially for the meeting and a preprint copy of a special issue of the reports of the International Whaling Commission (IWC). The meeting concentrated on the population identity and social structure of pilot whales, while population dynamics parameters had not been dealt with in such great depth. A status evaluation had been prepared, but there was no direct information on population trends.

The Study Group had not found it easy to deal with multispecies interactions which had been included in their terms of reference and had concluded that they required input from other Groups within ICES. In this context, it was agreed that the Secretariat should supply the available information on squid and blue whiting. Because of the uncertain population structure, modelling the dynamics of pilot whale populations was at present very difficult, but it had been possible to reject a number of hypotheses about the population structure of the species in the North Atlantic.

The Chairman of the Consultative Committee commented on the disappointing participation at the meeting and on the fact that the full balance of expertise had not been made available. This was due to the fact that two Member Countries which had scientists working on this species had not sent anyone to the meeting. For this reason, the Study Group had been unable to evaluate a number of questions on which there was a difference of scientific opinion.

The Study Group was commended for its report which had focused on the most important scientific issues. The Study Group had identified a list of points that required attention before any further meeting took place and had allocated these tasks to particular people. The Chairman of the Study Group pointed out that some of these tasks were already in progress and that most of them were likely to be completed in the first half of 1994. The Study Group had concluded that, to maintain impetus, it would be worthwhile holding a further meeting in 1994.

The Committee considered that it was important to see the work of the Study Group through to completion, but queried whether answers to the questions identified would be sufficient to resolve the outstanding problems in evaluating the status of pilot whales and how long the Group was likely to take to finish its work.

It was noted that the report had contained many references to unpublished working papers, some of which had not been fully evaluated due to lack of time. It was pointed out that a full set of the working papers was available at ICES Headquarters.

The Chairman of the Study Group indicated his willingness to continue as Chairman for the time being.

During a later discussion, the Chairman of the Marine Mammals Committee reported that his Committee had been pleased with the Group's progress and had endorsed the proposed work items and the proposal to hold a further meeting. The Consultative Committee discussed whether a further meeting should be considered at this stage or whether the Study Group could work by correspondence until ACFM had reviewed the report. It was pointed out that working by correspondence might enable a larger number of people from more Member Countries to contribute to the work of the Study Group. It was, however, felt that working by correspondence would be unlikely to result in a fully agreed report and that a further meeting should be held in 1994 to continue the work started in 1993, with the same terms of reference as in 1993. In light of some uncertainty as to whether a meeting in 1994 or working by correspondence would be more desirable from all points of view, the Committee agreed to delegate authority to the Chairman to take the appropriate decision when that recommendation was considered by the Delegates.

The Chairman of the Committee concluded that there was general satisfaction with the work of the Group within ICES because they had made considerable progress and had kept to their remit. The Committee felt, however, that the membership needed to be expanded if substantial progress were to be made.

In discussing the Study Group's future, the Committee decided that it should continue to report to the Consultative Committee until a clearer ICES policy on the handling of marine mammals issues had been formulated.

Item 5.4 Steering Group on Fisheries/Environmental Management Objectives and Supporting Research Programmes in the Baltic Sea

The Chairman drew attention to the report of the 1993 meeting of the Steering Group on Fisheries/Environmental Management Objectives and Supporting Re-

search Programmes in the Baltic Sea (Doc. C.M. 1993/ J:3). He pointed out that the Group had experienced problems, some of which were due to the fact that it had not received adequate support and guidance from the Consultative Committee. The Group was a product of the Eighth Dialogue Meeting on fisheries and environmental problems in the Baltic Sea and comprised Chairman of several ICES Committees as well as fisheries and environmental managers. Although the idea for such a Group was good, there had been difficulties in carrying out the work. The Steering Group had identified four major fields in which research was required in the Baltic Sea to assist managers in making appropriate policy decisions. However, since the Steering Group felt that it did not have an adequate breadth of scientific experience, it had recommended that the report receive broad review among relevant Working Groups within ICES. Finally, the Steering Group reported that it felt that it had accomplished its task and recommended that it now be dissolved.

It was noted that this report had recently been presented to the meeting of the International Baltic Sea Fishery Commission, but had received little discussion. The Committee felt that the document deserved more discussion and use and hoped that greater discussion would take place on the environmental side of this work.

In the discussion of this report, it was noted that the dialogue established with the managers on the Steering Group had been very valuable, and managers had provided substantial assistance in the preparation of the report. Thus, the idea of this interchange had been good, but the forum had probably not been optimal.

Noting that this document would need wide circulation to be put to the use for which it was intended, i.e., to serve as a guide to funding agencies on the types of research needed in the Baltic Sea relative to fisheries and environmental problems, the Committee requested that the ICES Secretariat should investigate options for "packaging" this document in a more attractive way, with a nice cover and an executive summary and circulating it in a broader manner. The Chairman of ACFM agreed to work with the Chairman of the Consultative Committee to prepare further suggestions on how this could be done.

The Committee agreed that ACFM and ACME should review this report at their next meetings and, if they wished specific Working Groups to review it, they should contact the relevant Groups directly to carry out this review.

In concluding its discussion of this report, the Consultative Committee agreed to dissolve the Steering Group.

Agenda Item 6 TENTH DIALOGUE MEETING

Following preliminary discussion at the mid-term meeting of the Committee, the Chairmen of ACFM and ACME had agreed that the next Dialogue Meeting should focus on fisheries, environmental, and interdisciplinary issues in the southern part of the ICES area - an area that had tended to be ignored in previous Dialogue Meetings. This proposal had received support at the ACFM and ACME Consultations.

It was suggested that the title of the Dialogue Meeting needed to be thought about carefully to ensure that it was of wide interest. Since there were already a number of Symposia and other meetings scheduled to take place in 1995, and since the success of the Dialogue Meeting was likely to depend on the level of planning, it was proposed that the Dialogue Meeting should be deferred to 1996. Also, the language to be used at the meeting needed to be decided and it was considered essential to involve national Delegates from the countries likely to be most concerned (France, Spain, and Portugal) at an early stage of the planning.

To deal with this, the Chairman asked the Advisory Committee Chairmen to arrange a meeting with appropriate Delegates during the Statutory Meeting. As a result, the Committee was presented with a proposal that the Dialogue Meeting should be held in 1996 with the title: "Fisheries and Marine Environmental Problems in the Bay of Biscay and Iberian Region." It was also proposed that a planning meeting should be held in Vigo, Spain in March or April 1994 with the aim of establishing a Steering Group and having preliminary discussions about the format and subject areas of the Dialogue Meeting and its logistic requirements. It was agreed that the planning meeting should be attended by the Chairmen of the Advisory Committees, national representatives of the three countries concerned, and the Fishery Secretary, and that a representative of the Commission of the EC should be invited to attend.

Agenda Item 7 COUNCIL POLICY ON MARINE MAMMAL RESEARCH

The Committee felt that the difficulties in deciding how the work within ICES in dealing with marine mammals issues should proceed were largely due to the lack of a clear ICES policy on this matter.

The Chairman of the Marine Mammals Committee outlined his ideas on the structure of work on marine mammals within ICES. At present, expertise on the various aspects of marine mammals research required coordination and it was difficult for ICES to address all the questions that arose. He proposed a more permanent arrangement within ICES to deal with:

i) the effect of contaminants, pollutants, and diseases;

ii) the population dynamics of marine mammals;

iii) multispecies interactions and trophic relationships.

The Chairman of the Committee thanked the Chairman of the Marine Mammals Committee for his suggestions which would provide food for thought, and the Committee agreed that a policy document on marine mammals should be prepared as soon as possible and reviewed at the mid-term meeting of the Committee. A recommendation to this effect was prepared by the Committee.

Agenda Item 8 REPORT OF THE BUREAU WORKING GROUP ON STRATEGIC PLANNING FOR SCIENTIFIC COOPERATION AND ADVICE

In introducing this item, the Chairmen expressed the hope that the discussion would help summarize the overall reactions to Doc. C.M. 1993/Gen:6 (Report of the Bureau Working Group on Strategic Planning for Scientific Cooperation and Advice) and Doc. C.M. 1993/Gen:4 (Report of Mid-term Meeting of Consultative Committee), both of which had been on the agenda of each Committee. In addition, these documents had been discussed at length during Theme Session U on "Improving ICES Science and Communications". The Committee was, therefore, in a good position to gauge the overall feeling amongst the ICES community concerning the need for change in the format of the Statutory Meeting, as well as the basic Committee structure in ICES.

Each Committee Chairman reviewed the results of the discussion in his/her respective Committee. Generally, much criticism was levelled at many of the proposals made in the Bureau document, whereas the comments made during the mid-term Consultative Committee appeared to be more in tune with general opinion. There was clear agreement on the need for change, as many aspects of ICES work did not meet their objectives. In particular, the average quality of papers was considered to be low, but no clear way could be seen on how to raise this level. However, it was clear that serious attempts had to be made to raise these standards, as the basic remit of ICES to provide advice could not be met without a firm science base obtained using the best scientific expertise available.

There was a clear consensus amongst a number of Committees that the Committees themselves must be downgraded in order to satisfy the interdisciplinary needs of ICES. Theme Sessions and especially Joint Committee Sessions were seen as the basic ingredient of future Statutory Meetings. It was noted that the formula of Joint Committee Sessions used this year for the first time in several years had been particularly successful. This had helped, for example, the Pelagic Fish Committee to appreciate that close and continuing collaboration with the Hydrography and Biological Oceanography Committees was an essential ingredient to future meetings. It was noted that interdisciplinarity was a very important ingredient on which ICES advice was dependant, and fostering this need was essential. This could be met by encouraging interdisciplinary papers, but an important base would remain the single-disciplinary specialist paper, but presented preferably in the interdisciplinary (Theme Session) framework.

The Chairmen of the three Fish Committees which had been proposed for merger into a Fish Ecology Committee in Doc. C.M. 1993/Gen:6 indicated that the topic of Fish Ecology was very relevant to their goals, but that there was considerable opposition to the idea of a merger. The subject of Fish Ecology could, however, be a prime candidate in any future Theme Session, as was the topic of Fisheries Management Systems. The Chairman of the Baltic Fish Committee confirmed that it was the view of his Committee that the fisheries of the Baltic Sea were a very special regional issue, and a separate Committee addressing this area should be maintained. The Chairman of the Statistics Committee indicated that his Committee had supported the idea of a change in the name of his Committee to reflect the broadening of its subject matter.

The President explained that he believed Doc. C.M. 1993/Gen:6 had met its objectives in triggering the right kind of discussion on these issues. Most of the criticisms levelled at the document were justified, but this document must now be laid aside and detailed thought given to the next stage of this debate. Geo-political changes in the ICES area of interest were likely to be very significant between now and the end of the century, and it was important that ICES be sufficiently healthy and strong to enable it to meet the challenges and threats that these changes might pose.

The results of the questionnaire which had been developed at the mid-term meeting in an attempt to obtain information about individual opinion concerning the Statutory Meeting, and which had been made available to each participant at the start of the meeting, were summarized by the Chairman. About 90 responses had been received, and a preliminary analysis of these had demonstrated an overwhelming majority in favour of fewer paper presentations. The Chairman pointed out that such a response did not necessarily mean that there was a demand for fewer paper submissions. Another strong signal that emerged from the analysis of this

questionnaire was that there must be fewer overlapping sessions at future meetings.

The Chairman noted that most of the suggestions and issues put forward were still at the discussion stage, and many issues had yet to be resolved. These included the quality and quantity of ICES Statutory Meeting papers, the overall Subject/Area Committee structure, including their interface with the Advisory Committees, and the structure of the Statutory Meeting itself. A number of ideas had been put forward concerning how to balance business and science, and how to ensure the injection of new blood into the ICES Committees and Working Groups. Since some of these issues had to be resolved with some urgency in order to ensure that at least some of the proposed ideas could be put into practice at the 1994 Statutory Meeting, the Committee agreed that a mid-term meeting in 1994 was essential. Any proposals entailing a change in the Rules of Procedures could not be implemented in time for use at the next Statutory Meeting. Prior to issuing the call for papers for the 1994 Statutory Meeting in January 1994, it would be necessary for Chairmen to have agreed on Theme Sessions and Joint Committee Sessions to ensure that authors would submit papers accordingly.

Agenda Item 9 REPORT FROM THEME SESSION U ON "IMPROVING ICES SCIENCE AND COMMUNICATIONS"

There was no separate discussion of the report from Theme Session U on "Improving ICES Science and Communication" as the discussion of this topic was merged with the discussion of the previous agenda item, namely, the Report of the Bureau Working Group on Strategic Planning for Scientific Cooperation and Advice.

Agenda Item 10 STATUS REPORT ON RECORDING OF RARE FISH SPECIES FROM THE ICES AREA

At the request of the Chairman, the Fishery Secretary reported on the present status of the discussions about the recording of rare fish species in the ICES area. At its mid-term meeting, the Committee had agreed that a meeting with the organizers of the "British Marine Fisheries Data Base" should be held at ICES Headquarters. This had not proved possible in advance of the Statutory Meeting, and the Committee was presented with, and endorsed, a proposal that the meeting should be held as soon as possible after the Statutory Meeting to discuss questions relating to the management, analysis, and quality control of the data base and practical details associated with the project. The appropriate recommendation was prepared for the Council.

Agenda Item 11 OPEN LECTURE AND MINI-SYMPOSIUM FOR 1995 STATUTORY MEETING

Open Lecture

The Committee noted that the Open Lecture at the 1994 Statutory Meeting would be given by Prof. (Ms) J. McGlade (University of Warwick, UK) on "Putting Fishermen into Fishery Models".

The Committee received only one proposal for the Open Lecture for the 1995 Statutory Meeting. It was tentatively agreed that Dr J.T. Carlton (USA) should be invited to present the 1995 Lecture on "Benefits and Responsibilities on the Introduction or Transfer of Organisms in Mariculture". However, it was also decided to defer a final decision until the June 1994 mid-term meeting of the Consultative Committee so as to give the Chairman additional time to explore other possibilities.

Mini-Symposium

The Committee was informed that preparations for the Mini-Symposium for the 1994 Statutory Meeting on the "Influence of Large-Scale Environmental Processes on the Migration, Distribution, and Abundance of Atlantic Fish Stocks and their Implication for Management", with Dr G.P. Arnold (UK) as Convener, were progressing nicely (Doc. C.M. 1993/A:6).

The Committee recalled that a proposal had been made by the Mariculture Committee at the 1992 Statutory Meeting for a Mini-Symposium in 1995 on "Benefits and Responsibilities on the Introduction or Transfer of Organisms in Mariculture", with Dr J.T. Carlton (USA) as Convener. In light of this topic (and speaker) having also been proposed for the Open Lecture for 1995, it was agreed to resolve the matter at the June 1994 mid-term meeting of the Consultative Committee.

Agenda Item 12 THEME SESSIONS AND JOINT COMMITTEE SESSIONS FOR 1994 AND 1995 STATUTORY MEETINGS

The Committee noted that three Theme Session topics for the 1994 Statutory Meeting had been proposed at the 1992 Statutory Meeting. The Convener for the proposed Theme Session on "Non-Target Species" (Dr O. Bergstad, Norway) had reported a good response to the topic and had suggested that it should remain on the list for 1994. The proposed topic "Impacts Likely to Affect Shellfish in Aquaculture and Natural Populations" had not generated any apparent interest, and it was uncertain whether an "ACFM/ACME Joint Session" would be appropriate.

A number of other topics were suggested for Theme and Joint Committee Sessions in 1994 and 1995 resulting in the following tentative list for the two years:

1994

a) Theme Session on "Non-Target Species"; Convener: Dr O. Bergstad (Norway);

b) Theme Session on "Multispecies Interactions of Importance to Groundfish Abundance Fluctuations"; Convener: Dr G. Winters (Canada);

c) Theme Session on "Impact of the 1993 Major Inflow to the Baltic Sea"; Convener: Mr H. Dahlin (Sweden);

d) Theme Session on "Pelagic Fish and Plankton Interactions in Marine Ecosystems"; Co-Conveners: Prof. E. Houde (USA) and Mr H.-R. Skjoldal (Norway).

e) Theme Session on "Large-Scale Circulation Changes in the North Atlantic on Time Scales of Climatic Changes"; Convener: Dr K.P. Koltermann (Germany);

f) Theme Session on "Improving the Link Between Fisheries Science and Management: Biological, Social, and Economic Considerations"; Co-Conveners: Dr M. Sinclair (Canada), Dr P. Clay (USA), and Dr J. Catanzano (France);

g) Joint Session of the Marine Mammals and Marine Environmental Quality Committees on "Occurrence and Effects of Contaminants in Marine Mammals";

h) Joint Session of the Marine Environmental Quality, Biological Oceanography, and Hydrography Committees on "Quality Assurance of Marine Measurements";

i) Joint Session of the Fish Capture, Statistics, Demersal Fish, and Pelagic Fish Committees on "Estimating Abundance from Fishing Surveys amd Acoustic Measurements: Survey Design, Analysis, and Error Estimation".

1995

a) Theme Session on "Causes of Observed Variations in Fish Growth"; Convener: Mr S. Sundby (Norway);

b) Theme Session on "Intermediate-Scale Physical Processes and their Influence on the Transport and Food Environment of Fish"; Co-Conveners: Dr F. Werner (USA) and Dr B. MacKenzie (Denmark);

c) Joint Session of the ANACAT and Mariculture Committees on "Interactions of Wild, Reared, Enhanced, and Ranched Salmon".

It was agreed that the complete list of topics for 1994 was provisional and would have to finalized by correspondence between the Chairman and members of the Consultative Committee so that an agreed list could be circulated in January 1994 with the call for papers for the 1994 Statutory Meeting. It was stressed that the call for papers should specify that only papers which related to these topics would be presented at the Statutory Meeting and all other papers would be read by title only. These topics would be provisional pending the submission of sufficient numbers of relevant paper titles and the final approval of the Consultative Committee at its June 1994 mid-term meeting. It was also emphasized that the number of overlapping Theme and Joint Committee Sessions at the 1994 Statutory Meeting should be held to a minimum.

Agenda Item 13 ICES SYMPOSIA

The following Symposia had been approved in previous years by the Council for 1994 and 1995:

a) "Zooplankton Production - Measurement and Role in Global Ecosystems Dynamics and Biogeochemical Cycles"; Co-Conveners: Dr M. Reeve (USA) and Mr H.-R. Skjoldal (Norway); to be held in Plymouth, England, UK from 15-18 August 1994;

b) "Fisheries and Plankton Acoustics"; Convenor: Mr E.J. Simmonds (UK); to be held in Aberdeen, Scotland, UK from 12-16 June 1995;

c) "Changes in the North Sea Ecosystem and their Causes: Århus 1975 Revisited"; Co-Conveners: Prof. N. Daan (Netherlands) and Dr (Ms) K. Richardson (Denmark); to be held in Århus, Denmark for 4 days in July 1995;

d) "Role of Marine Mammals in the Ecosystem" (co-sponsored by NAFO and ICES); Co-Conveners: Mr J. Sigurjónsson (Iceland) and Dr G. Stenson (Canada); to be held in Dartmouth, NS, Canada from 6-8 September 1995.

No proposals were received by the Committee for Symposia to be held in 1996.

Agenda Item 14 ACFM MATTERS

The minutes of the ACFM meetings held from 27 October - 4 November 1992 and from 18-26 May 1993 were tabled (Docs C.M. 1993/A:2 and A:3). It was also reported that the ACFM Consultations held on 22 and 25 September, mainly to discuss terms of reference, venues, and dates for Working Group meetings in 1994,

had been highly successful and that 30 people had attended in their capacities as members, alternates, or designees of ACFM, assessment Working Groups, or Subject/Area Committees.

It was reported to the Committee that appreciation had been expressed at the Consultations to the outgoing Chairman of ACFM, Dr F. Serchuk, for the outstanding work he had done on behalf of ACFM over the past three years.

Agenda Item 15 ACME MATTERS

Various topics contained in the minutes of the June 1993 ACME meeting (Doc. C.M. 1993/A:4) had been discussed under relevant previous agenda items. Owing to a lack of time, there was no specific discussion of the minutes nor of its Annex 2, Proposal for a Strategic Framework for ACME.

Agenda Item 16 RECOMMENDATIONS BY ADVISORY AND SUBJECT/AREA COMMITTEES

Item 16.1 Recommendations

The Chairman opened discussion on this topic by indicating that the procedure for handling the recommendations would be that the Committee would separate into three sub-groups for detailed consideration of the recommendations of all Subject/Area Committees and Advisory Committees as follows:

1) Statistics, Demersal Fish, Pelagic Fish, Baltic Fish, and ACFM;

2) Hydrography, Biological Oceanography, Mariculture, and Fish Capture;

3) Marine Environmental Quality, Shellfish, Anadromous and Catadromous Fish, Marine Mammals, and ACME.

In addition, the Chairman stated that the reports of the Subject/Area Committees should only contain a record of the issues that each Committee wished to bring forward to other bodies within ICES.

The Committee carefully considered all of the recommendations submitted by the Subject/Area and Advisory Committees and by the Consultative Committee itself. A few were rejected as being more properly included in the relevant Committee reports for action by the Committee Chairman. The resulting set of recommendations was approved for Council consideration.

ACFM

The Chairman of ACFM explained several issues regarding the recommendations from ACFM, pointing out that the new area-based assessment Working Groups opened up the possibility for the addition of environmental considerations for the areas concerned when this work progressed further. He also drew attention to the addition of some socio-economic aspects in the models to be considered by the Working Group on Long-Term Management Measures.

ACME

The Chairman of ACME pointed out that the recommendation for the mid-term meeting of ACME included several pro-active terms of reference, under which ACME would develop broader-based generic advice that could ultimately serve as the basis for more specific advice to individual regulatory commissions upon request.

The Chairman of ACME explained that ACME had recommended the establishment of a Study Group on the Occurrence of M-74 in Fish Stocks because it was felt that this topic must receive a broader treatment owing to the possibility that chemical contaminants were playing a role in this mortality. This Study Group should review all available information on the topic, including that concerning the potential role of contaminants. The Chairman of ACFM stressed that ACFM was very concerned about this mortality factor and needed the information as soon as possible, preferably by the November 1993 ACFM meeting, to be able to provide satisfactory advice on fishing for salmon in the Baltic Sea.

The ACME Working Group on Phytoplankton and the Management of their Effects was dissolved and replaced by a Working Group under the Biological Oceanography Committee.

Fish Capture

All recommendations were accepted with only minor amendment.

Hydrography

All recommendations were accepted with only minor amendment.

Statistics

The Chairman of the Statistics Committee brought the late submission of STATLANT 27A data to the attention of the Consultative Committee. In particular, no data had been received for 1989 from Spain; for 1990 from Ireland, Netherlands, and Spain; and for 1991 from Ireland, Netherlands, and Spain. This had had the effect of delaying the publication of *ICES Fisheries Statistics* and had meant that a number of Working Groups had had to use unofficial data in their assessments. As a result of the late submission of the data and the deterioration of the reliability of official statistics, the Statistics Committee had drafted a recommendation

instructing the General Secretary to make representations to Member Countries at Diplomatic level.

Marine Environmental Quality

A question was raised concerning the need for the Study Group on Environmental Modelling in the Baltic Sea, but it was agreed that the special conditions in the Baltic Sea justified a Group to handle modelling issues in this area. It was hoped that some outside expertise would also be available to this Group.

The Committee considered a recommendation that ICES Member Countries should be encouraged to apply more flexible rules to granting permission for conducting scientific research in their Exclusive Economic Zones. This recommendation had originally arisen from problems experienced in the Baltic Sea by research vessels attempting to track the inflow of saline water into the Baltic Sea during the winter of 1993, but discussion in the Marine Environmental Quality Committee had revealed that this problem occurred in many parts of the ICES area and thus the recommendation had been expanded to include all ICES Member Countries. The Consultative Committee noted that this recommendation was similar to a recommendation arising from the Hydrography Committee, but felt that the thrust of each recommendation was somewhat different and, accordingly, both should be brought forward to the Delegates.

All other recommendations from the Marine Environmental Quality Committee were accepted.

Mariculture

There was considerable discussion of issues arising from the Working Group on Introductions and Transfers of Marine Organisms (WGITMO), particularly in terms of whether and how specific ICES should be when requested to review an introduction or transfer by a Member Country. The Chairman of ACME reported that ACME had experienced considerable difficulty in reviewing the portions of the 1993 WGITMO report concerned with two proposed introductions of new species for mariculture purposes. It was not clear what the role of ICES was in relation to the relevant authorities that may be requested to license these introductions, nor whether the review should be confined only to disease implications of the transfer or whether the full ecological implications of the potential escape of the introduced species into the environment should also be considered. ACME strongly cautioned that there were potentially very serious problems associated with ICES involvement in the review of introductions and transfers of marine organisms and that a decision should be made as to Council policy on this matter.

In the discussion, it was noted that the potential ecological implications of introductions of new species were very large and extremely difficult to assess, and ICES could only provide guidance or advice on the basis of the available information. There were also large economic interests at stake, in light of strong commercial pressures for the development of mariculture operations. Accordingly, the Consultative Committee stressed the importance of the Council discussing the policy aspects of this issue and recommended that ICES offer advice on general policy issues and develop codes of practice for the introductions and transfer of new species for mariculture. ICES should not pass judgement on specific proposals for introductions or transfers.

The Consultative Committee had strong reservations about the present manner in which requests for advice were submitted to ICES, and were dealt with in a hierarchical manner within the ICES system. In all other types of advice, the Council channelled incoming requests through the existing Advisory Committees.

Requests for advice on specific introductions or transfers required local knowledge that the relevant Working Groups in ICES did not necessarily possess. In addition, there was the potential for a very large number of specific requests being directed to ICES in coming years.

The potential magnitude of requests for advice if local agencies were allowed to request specific advice from ICES and the time frame on which this advice ought to be made available were not compatible with the ICES structure or procedures.

The issues concerning introductions and transfers were more complex than earlier accepted, and could have wide-reaching consequences regarding ecosystem effects, including interactions with existing exploited populations.

Concerning the two proposals that had been considered by WGITMO and the Mariculture Committee, the Consultative Committee noted that the Mariculture Committee had provided different guidance from that provided by ACME. However, since the agreed procedure was for ACME to handle advice on introductions and transfers, it was clear that the ACME advice, as provided in the minutes of its 1993 meeting, was applicable.

The Consultative Committee also stressed the importance of ICES establishing a dialogue at high level with the European Community concerning the implications of a recent directive permitting shipments within the EC of live aquatic organisms. This directive contained provisions for preventing the transfer of disease agents, but there were also potential ecological and genetic impacts of such transfers that should be taken into consideration.

The recommendations of the Mariculture Committee were accepted.

Demersal Fish

The recommendations of the Demersal Fish Committee were accepted.

Pelagic Fish

The recommendations of the Pelagic Fish Committee were accepted.

Baltic Fish

The recommendations of the Baltic Fish Committee were accepted.

Shellfish

In reviewing the recommendations from the Shellfish Committee, this Committee's Working Groups were commended for conducting an increasing amount of work on population dynamics and preparing a foundation for an assessment of shellfish stocks. The Study Group on Pollution Affecting Shellfish in Aquaculture and Natural Populations was dissolved.

Biological Oceanography

The Committee rejected a term of reference for the Study Group on Gulf III Sampler Efficiency to develop a proposal for work to be funded by the Commission of the EC on the grounds that such an objective for an ICES Study Group was not appropriate.

ANACAT

In reviewing the recommendations of the ANACAT Committee, it was noted that the Atlantic Salmon Trust had offered to co-sponsor a Workshop on Salmon Spawning Targets in the Northeast Atlantic. The Consultative Committee recommended that ICES accept this offer of co-sponsorship and indicate any associated financial considerations.

Marine Mammals

The recommendation from this Committee was accepted without comment.

Consultative

The Consultative Committee reviewed the recommendations concerned with work to be conducted in 1994 on the topic of cod and climate change, noting that three relevant Workshops had been proposed. Although some members felt that some prioritization should be given to these activities, the Committee ultimately agreed that all the proposed activities should be supported because the issue of cod and climate change was very important within ICES at this time.

The Committee also considered whether the Working Group on Cod and Climate Change should remain under the Consultative Committee or be moved to one or more other Committees. It was agreed that this Working Group should remain under the Consultative Committee for the time being, owing to the interest of a number of Committees in the work of this Group.

The Consultative Committee then considered its own recommendations. It approved a recommendation on the Study Group on Long-Finned Pilot Whales, agreeing that it should either meet at ICES Headquarters in 1994 or work by correspondence, depending on the preference of Delegates (see Agenda Item 5.3). The Committee also recommended that an *ad hoc* Group should be established to develop a proposal for an ICES policy on the handling of issues concerning marine mammals. The Chairman of the Consultative Committee should chair this Group and represent the scientific opinion agreed by the Committee.

Noting that there were a still a number of scientific and strategic matters related to improving the interdisciplinary role of the Council and the structure of the Statutory Meeting which the Consultative Committee needed to address, it was recommended that a mid-term meeting be held on 1-2 June 1994, immediately after the ACME meeting. At that time, the Committee should also make a final decision on the Open Lecture for the 1995 Statutory Meeting. The Chairman of ACFM objected to these dates, as they would be inconvenient to his successor who would need this time to prepare for the NASCO meeting shortly thereafter. After discussion, it was agreed to retain the dates proposed for the meeting.

Item 16.2 Working/Study Groups to be Dissolved/ Established

The following table lists the various Working Groups, Sub-Groups of Working Groups, Study Groups, Planning Groups, Steering Groups, other groups, Planning Meetings, and Workshops that were dissolved, established, or renamed by virtue of Council Resolutions at the 1993 Statutory Meeting:

Type of Action	Name
Dissolved	**Working Group**
	Working Group on Phytoplankton and the Management of Their Effects
	Working Group on the Assessment of the European Eel
	Study Group
	Study Group on the North American Salmon Fisheries
	Study Group on North-East Atlantic Salmon Fisheries
	Study Group on the Stock Identity of Mackerel and Horse Mackerel
	Study Group on Impacts Likely to Affect Shellfish in Aquaculture and Natural Populations
	Study Group on the Biology of Baltic Flounder
	Planning Group
	Planning Group for the Development of Multispecies, Multifleet Assessment Tools
	Planning Group on the Stomach Sampling Project in 1991
	Planning Group for Acoustic Surveys in ICES Sub-Areas VII and IX
	Steering Group
	Steering Group on Fisheries/Environmental Management Objectives and Supporting Research Programmes
	Steering Group for the Production and Publication of an Atlas of North Sea Fish
	Other Group
	Inter-Committee Recruitment Group
Established	**Working Group**
	Joint EIFAC/ICES Working Group on Eel
	Working Group on Phytoplankton Ecology
	Sub-Group of a Working Group
	Sub-Group on Temporal Trend Monitoring Programme for Contaminants in Biota
	Sub-Group on Methodology of Fish Survival Experiments
	Sub-Group on Statistical Analysis of Fish Disease Data
	Sub-Group of the Baltic Salmon and Trout Assessment Working Group
	Study Group
	Study Group on the Biology and Assessment of Deep-Sea Fisheries Resources
	Study Group on the North Sea "Plaice Box"
	Study Group on Herring Assessment and Biology in the Irish Sea and Adjacent Areas
	Study Group on Spatfall and Recruitment in Bivalve Stocks
	Study Group on Occurrence of M-74 in Fish Stocks
	Study Group on Interactions of Wild, Ranched (Enhanced), and Reared Salmon
	Study Group on Anadromous Trout
	Steering Group
	Steering Group on Integrated Study of Processes of Pollutant Transfer and Effects on Biota

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Type of Action	Name
Established	**Other Group**
	Ad Hoc Group on ICES Marine Mammal Policy
	Workshop
	Workshop to Evaluate the Potential of Stock Enhancement
	Workshop on Hydroacoustic Instrumentation
	Workshop on Sampling Strategies for Age and Maturity Data
	Workshop on Age Reading of Oceanic *Sebastes mentella*
	Workshop on Herring Age Reading
	Mackerel/Horse Mackerel Egg Production Workshop
	BMB/ICES Workshop on Flounder Diseases and Parasites in the Baltic Sea
	BMB/ICES Sea-Going Workshop on Diseases and Parasites of Baltic Fish
	Workshop on Salmon Spawning Stock Targets in the Northeast Atlantic
	ICES/GLOBEC Cod and Climate "Aggregation" Workshop
	ICES/GLOBEC Workshop on Cod and Climate Data Base
	ICES/GLOBEC Cod and Climate Backward-Facing Workshop
	ICES/HELCOM Workshop on Quality Assurance of Pelagic Measurements in the Baltic Sea
	ICES/HELCOM Workshop on Quality Assurance of Benthic Measurements in the Baltic Sea
	Workshop on Baltic Cod Age Reading
	Workshop on Intercomparison of *In Situ* Growth Rate Measurements
	Workshop on Modelling the Population Dynamics of Harmful Algal Blooms
	Laboratory Workshop on *Calanus*
	Workshop on Trans-Latitudinal Study of *Calanus finmarchicus* in the North Atlantic
	Planning Meeting
	Planning Meeting for the Tenth ICES Dialogue Meeting
	Planning Meeting on Rare Fish Data Base
Renamed	**Working Group**
	Working Group on Application of Genetics in Fisheries and Mariculture (formerly Working Group on Genetics)
	Working Group on Harmful Algal Bloom Dynamics (formerly Study Group on the Dynamics of Algal Blooms

The following table compares the number of scheduled meetings of Council Groups, Workshops, and Advisory Committees in 1990-1994. After having declined from 77 meetings in 1991 to 75 in 1992, the number increased to 79 in 1993 and further to 91 in 1994. The marked increase from 1993 to 1994 in the number of meetings is a direct result of an increase in Workshops (+15) and meetings of Sub-Groups of Working Groups (+4).

Meetings	1990	1991	1992	1993	1994
Working Groups	46	45	36	42	40
Sub-Group of a Working Group	1	-	1	1	5
Study Groups	12	16	16	19	16
Planning Groups	3	4	4	3	2
Workshops	3	6	9	4	19
Advisory Committees	3	3	3	3	3
Others	5	3	6	7	6
Total	73	77	75	79	91

Item 16.3 New Working/Study Group Chairmen

The Council's attention was drawn to the following new Chairmen of Working Groups, Study Groups, Planning Groups, Steering Groups, other groups, and Workshops:

Chairman	Group
Mr A. Aglen (Norway)	Planning Group for Herring Surveys
Dr J. Alheit (Germany)	ICES/HELCOM Workshop on Quality Assurance of Pelagic Measurements in the Baltic Sea
Dr M. Armstrong (UK)	Study Group on Herring Assessment and Biology in the Irish Sea and Adjacent Areas
Mr D.B. Atkinson (Canada)	Workshop on Age Reading of Oceanic *Sebastes mentella*
Prof. U. Bamstedt (Norway)	Laboratory Workshop on *Calanus*
Dr R.C.A. Bannister (UK)	*Ad Hoc* Group on ICES Marine Mammal Policy
Dr G. Bylund (Finland)	BMB/ICES Workshop on Flounder Diseases and Parasites in the Baltic Sea
Dr F. Colijn (Netherlands)	Working Group on Phytoplankton Ecology
Mr A. Corten (Netherlands)	Workshop on Herring Age Reading
Dr I. Davies (UK)	Working Group on Environmental Assessment and Monitoring Strategies
Dr R.R. Dickson (UK)	ICES/GLOBEC Cod and Climate Backward-facing Workshop
Dr R. Dijkema (Netherlands)	Study Group on Spatfall and Recruitment in Bivalve Stocks
Dr W. Fennel (Germany)	Workshop on Modelling the Population Dynamics of Harmful Algal Blooms
Dr K.T. Frank (Canada)	ICES/GLOBEC Cod and Climate Backward-facing Workshop
Dr K. Friedland (USA)	Sub-Group of the Baltic Salmon and Trout Assessment Working Group
Dr J. Horbowy (Poland)	Working Group on the Assessment of Pelagic Stocks in the Baltic
Mr T. Jakobsen (Norway)	Workshop to Evaluate the Potential of Stock Enhancement
Mr B. Jones (UK)	Study Group on the Biology and Assessment of Deep-Sea Fisheries Resources
Mr B. Jonsson (Norway)	Study Group on Anadromous Trout
Mr H.P. Knudsen (Norway)	Workshop on Hydroacoustic Instrumentation
Dr K. Kosswig (Germany)	Workshop on Age Reading of Oceanic *Sebastes mentella*
Dr T. Lang (Germany)	BMB/ICES Sea-Going Workshop on Diseases and Parasites of Baltic Fish
Dr B. MacKenzie (Denmark)	ICES/GLOBEC Cod and Climate "Aggregation" Workshop
Mr S. Mellergaard (Denmark)	Study Group on Occurrence of M-74 in Fish Stocks
Dr C. Miller (USA)	Workshop on the Trans-Latitudinal Study of *Calanus finmarchicus* in the North Atlantic
Dr R. Millner (UK)	Study Group on the North Sea "Plaice Box"
Dr C. Moriarty (Ireland)	Joint EIFAC/ICES Working Group on Eel
Dr J. Mork (Norway)	Working Group on the Application of Genetics in Fisheries and Mariculture
Mr S. Munch-Petersen (Denmark)	Working Group on the Assessment of Demersal Stocks in the Baltic
Dr S. Murawski (USA)	ICES/GLOBEC Workshop on Cod and Climate Data Base
Dr J. Netzel (Poland)	Workshop on Baltic Cod Age Reading
Dr M. Nicholson (UK)	Working Group on Statistical Aspects of Environmental Monitoring
Mr E.C.E. Potter (UK)	Working Group on North Atlantic Salmon
Mr E.C.E. Potter (UK)	Workshop on Salmon Spawning Stock Targets in the Northeast Atlantic
Ms B. Reguera (Spain)	ICES/IOC Working Group on Harmful Algal Bloom Dynamics
Dr H. Rumohr (Germany)	ICES/HELCOM Workshop on Quality Assurance of Benthic Measurements in the Baltic Sea
Dr M. St. John (Denmark)	ICES/GLOBEC Cod and Climate "Aggregation" Workshop
Ms M.A. Sampayo (Portugal)	Workshop on Intercomparison of *In Situ* Growth Rate Measurements
Mr G. Sangster (UK)	Sub-Group on Methodology of Fish Survival Experiments
Mr H-R. Skjoldal (Norway)	Laboratory Workshop on *Calanus*
Dr R. Stagg (UK)	Working Group on the Biological Effects of Contaminants
Dr A. Stebbing (UK)	Steering Group on Integrated Study of Processes of Pollutant Transfer and Effects on Biota
Dr G. Stefánsson (Iceland)	Workshop on Sampling Strategies for Age and Maturity Data
Ms J.G. Stottrup (Denmark)	Workshop to Evaluate the Potential of Stock Enhancement
Dr K. Tande (Norway)	Workshop on Trans-Latitudinal Study of *Calanus finmarchicus* in the North Atlantic

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Chairman	Group
Dr P. Tett (UK)	Workshop on Modelling the Population Dynamics of Harmful Algal Blooms
Dr J. Thulin (Sweden)	BMB/ICES Sea-Going Workshop on Diseases and Parasites of Baltic Fish
Dr A.D. Vethaak (Netherlands)	Sub-Group on Statistical Analysis of Fish Disease Data
Dr S.J. Walsh (Canada)	Working Group on Fishing Technology and Fish Behaviour
Mr A. Youngson (UK)	Study Group on Interaction of Wild, Ranched (Enhanced), and Reared Salmon

Agenda Item 17 MATTERS REFERRED TO THE COMMITTEE BY THE BUREAU OR COUNCIL

No specific matters were referred to the Committee for consideration.

Agenda Item 18 ANY OTHER BUSINESS

There were no matters raised that had not been covered under other agenda items.

The Chairman expressed the regret that it had not been possible to devote further time to discussion on several of the agenda items. However, he noted that the Committee had handled a number of very important matters and had some very useful and stimulating discussion. He expressed his thanks and appreciation to all members for their cooperation and enthusiasm. The incoming Chairman voiced the gratitude of the Committee for the fine job rendered by the outgoing Chairman and wished him the best in his new capacity as General Secretary. The meeting was adjourned at 19.05 hrs.

DOCUMENTS

A:1		Agenda for the Consultative Committee
A:2		Minutes of ACFM meeting, ICES Headquarters, 27 October - 4 November 1992
A:3		Minutes of ACFM meeting, ICES Headquarters, 18-26 May 1993
A:4		Minutes of ACME meeting, ICES Headquarters, 1-11 June 1993
A:5		Compendium of recommendations from Working/Study Group reports
A:6	G.P. Arnold	Report on progress in preparation for the 1994 Mini-Symposium on the Influence of Large-Scale Environmental Processes on the Migration, Distribution and Abundance of Atlantic Fish Stocks and their Implication for Management
Gen:4 Ref. A+Del		Report of mid-term meeting of Consultative Committee
Gen:6 Ref. A+Del		Report of the Bureau Working Group on Strategic Planning for Scientific Cooperation and Advice

FISH CAPTURE COMMITTEE

Chairman: Mr R. Fonteyne
Rapporteur: Dr O.A. Misund

The Committee met on 23 September from 16.30 - 18.00 hrs, on 24 September from 09.00 - 11.00 hrs, and on 27 September from 09.00 - 13.00 hrs. During the sessions, the Report of Activities, five Working and Study Group reports, and 23 scientific contributions were presented. Three contributions were presented at Joint Sessions with other Committees, two contributions were presented at Theme Session T, and one contribution was given at a Poster Session.

Committee Business

The Fish Capture Committee meeting was opened by the Committee Chairman, Mr R. Fonteyne, and Dr O.A. Misund was appointed as Rapporteur. After adoption of the agenda, the Chairman referred to Docs. Gen:4 and Gen:6, both containing information on the future of ICES, and to a letter sent by the Chairman to Committee members in February asking for advice on how to improve the Committee meetings.

Members suggested better communication with other scientific Committees of ICES and the need to attract more people from different disciplines. More Joint Sessions or Theme Sessions should be arranged. It was also suggested that the number of contributions to be presented should be reduced by allocating more papers to Poster Sessions and perhaps by asking only for papers on special topics.

The Chairman then presented the Report of Activities (Doc. B:1) and summarized the topics concerned (gear performance, selectivity, survival, and fisheries acoustics) and indicated the Member Countries that had activities on these topics. Mr B. van Marlen (Netherlands) resigned as Chairman of the Working Group on Fishing Technology and Fish Behaviour (FTFB) after having served in that capacity for seven years, and Dr S. Walsh (Canada) was appointed new Chairman.

Working Group Reports

Mr B. van Marlen presented a report (Doc. B:2) of the meeting of the FTFB Working Group, held in Gothenburg, Sweden from 19 - 20 April 1993. Terms of reference for the meeting had been to a) consider the survival of fish caught by and escaped from fishery gear; b) evaluate the physical impact of fishing gear; c) consider and develop the conclusions of the work of the Sub-Group on Selectivity Methods; and d) consider the report of the Working Group on Long-Term Management Measures. Five of the eighteen scientific contributions presented at the meeting considered the special topics. Several recommendations were suggested for consideration in the Committee.

The report (Doc. B:3) of the Working Group on Fisheries Acoustic Science and Technology (FAST) which had met in Gothenburg, Sweden from 21 - 22 April 1993 was presented by the Chairman, Mr E.J. Simmonds. The terms of reference for the meeting had been to: a) consider the progress in methodology in fisheries and zooplankton acoustics; and b) review the progress of the Study Groups on Target Strength Methodology and on Research Vessel Noise Measurements. Three scientific contributions concerning target strength studies and seven scientific contributions on survey methodology had been presented at the Working Group meeting A number of recommendations were suggested to the Committee for consideration.

Mr Simmonds also presented the report (Doc. B:5) of the Study Group on Research Vessel Noise Measurements which met in Gothenburg, Sweden on 19 April 1993 with Mr R. Mitson as Chairman. The Study Group had met to specify and summarize available information on the essential noise requirements for research vessels with a view to recommending measuring procedures. It was agreed that the information available was insufficient to determine the essential noise requirements for research vessels.

It was recommended that any existing noise signatures of vessels used for fisheries research should be made available to the Study Group, and that such noise signatures should be measured for all fisheries research vessels.

Mr Simmonds ended his presentation by referring to the Study Group on Target Strength Methodology which had met in Gothenburg, Sweden 19 April 1993 with Mr E. Ona as Chairman. This Group would prepare a report on the methodology for target strength measurements for fish and micronekton with special reference to *in situ* techniques. The report was scheduled to be published in 1994 as an *ICES Cooperative Research Report.*

Doc. B:4 was a report of the Joint Session of the FTFB and FAST Working Groups which was held in Gothenburg, Sweden on 20 April 1993 with Dr W. Karp as Chairman. The terms of reference for the Session had been to: a) consider the problems of near-bottom sampling in acoustic and combined trawling/acoustic surveys; and b) consider the errors which may arise in near-bottom stock density estimates. Two papers on these

topics and a paper on the Lowestoft data storage tag for studies of fish migration had been presented.

Mr T.K. Stokes, Chairman of the Working Group on Long-Term Management Measures (LTMM) addressed the Committee by referring the terms of reference for the LTMM Working Group and asked for identification of areas of common interest to the FTFB Working Group. This initiative was welcomed by the Committee and it was stressed that the relevant results presented in the FTFB Working Group needed to be communicated to the LTMM Working Group.

Recommendations

The Committee forwarded a number of recommendations to the Consultative Committee concerning the activities in the FTFB and FAST Working Groups. Among these were recommendations for activities in two Study Groups, two Sub-Groups, and one Workshop. It was suggested that the Chairman of the FTFB Working Group should contact competent institutes to obtain information for the reviews of the characteristics of netting and twines and of the methods to measure them, as requested in the terms of reference for the FTFB Working Group.

It was suggested that one of the recommendations concerning the FAST Working Group, i.e., to consider the combination of information obtained from fishing samples and acoustic measurements in the estimation of abundance with the aim of identifying the source and magnitude of errors, might be a suitable subject for a Joint Session with the Pelagic Fish, Statistics, and other interested Committees.

Scientific Contributions

The presentations of scientific contributions opened with Doc. B:27 on the needs and opportunities of fish capture research. The author stressed the multidisciplinary approach needed to develop more efficient and more selective gears as well as the need for better instrumentation to measure gear performance and fish behaviour. A comment to the paper was that considerations of the economic consequences of introducing new selectivity techniques were lacking. The meeting continued with the presentation of six papers concerning gear selectivity and fish survival. Doc. B:11 considered some problems of water flow through the codend based on a theoretical approach. The results were analyzed with regard to the impact of flow velocity on hydrodynamic forces opening up the codend showing that changing the direction of the codend meshes by 90° could change the operation of longitudinal forces. This would result in a greater mesh opening coefficient and better selectivity of the codend. Doc. B:13 presented the results of research on improving selectivity of North Sea beam trawls that had been conducted through an EC project. Constructions that seem effective for reducing the roundfish by-catch were large mesh top panels in V-nets and a reduced top panel with a square mesh window in round nets. The discussion centred around the difficulties in observing fish behaviour towards beam trawls because of the sand cloud and high towing speed. Results of square mesh panel studies in the Irish Sea *Nephrops* fishery were given in Doc. B:20. A section of large diamond meshes in the top sheet of the trawl remained closed during towing and allowed only negligible escape, while a square mesh section reduced the by-catch of small fish by up to 80%. Behaviour studies by UTV showed that each species performed characteristic escape reaction in the trawl. Doc. B:35 concerned grid devices to select shrimp size in trawls tested in West Greenland waters. Up to 60% of the smallest shrimp were sorted out by the three devices tested, but there was also some loss of larger shrimp. Only redfish were sorted out effectively, and there was no sorting at all of Greenland halibut.

Survival of Baltic herring escaping through a 36-mm diamond mesh codend and through a rigid sorting grid mounted in the rear belly of a pelagic herring trawl was presented in Doc. B:14. Mortality of escapees was up to 90% indicating that management by mesh regulations was questionable. A survival rate of about 65% for undersized salmon after release from Finnish trap nets was the conclusion in Doc. B:10.

The meeting considered five papers on fishing gear construction and performance. Doc. B:18 presented experience from Norwegian trials using the constraint technique in bottom-trawl doors to reduce the variability in geometry of sampling trawls with depth. A three-level pelagic trawl for near-surface sampling of juvenile fish was presented in Doc. B:19. The new trawl showed high efficiency for small juveniles in the near surface layers compared to a standard sampling trawl and demonstrated that changes in densities in these layers could result in significant effects on the reliability of the catch data from the standard trawl. Doc. B:33 considered design and construction of cambered V-doors using a numerical example to explain the design process. A capture technique for wrasse used as cleanerfish in salmon aquaculture was presented in Doc. B:22. A new pot design was most effective and wrasse catches in southern Norway seemed to be dependent on a critical sea temperature. Doc. B:15 presented an investigation on the efficiency of spring-loaded dredges used in the western English Channel fishery for scallops, *Pecten maximus*. Depending on bottom type, efficiency measured as numbers of recaptures of seeds varied from 6% to 41%, being higher with softer bottom substrate. Efficiency was also found to be size dependent on an optimum for shells of around 90 mm.

Only one contribution concerning fish behaviour was presented at the meeting. Doc. B:23 presented experience

from tracking of fish and crustaceans using a new radio link telemetry positioning system.

Eight contributions concerned fisheries acoustics. There were three presentations on school identification and detection. Doc. B:8 presented software for school identification and parameterization from echo sounder recordings, while Doc. B:9 considered fish school species identification using a neural network. Doc. B:17 presented software for detection of schools for counting and quantification of size and swimming behaviour by a high resolution multibeam sonar. Doc. B:21 presented a study on the homogeneity in allocation of echo values when judging acoustic records. In general, the average echo value allocated to a species was rather similar, but significant and noticeable differences were detected. Doc. B:40 presented *in situ* target-strength measurements of Icelandic summer-spawning herring in the period 1985-1992. The measurements indicated a fairly high target strength for herring, reported from Icelandic investigations. The target strength decreased by about 0.2 dB for a 1 % increase in fat content. The new TS-measurements were not considered to give a realistic and practical applicable TS-equation as it would reduce earlier stock size estimates of Icelandic herring by about 70%. Reasons for the discrepancy, including inadequate coverage during earlier surveys, extinction, and other behaviour of the fish during TS-measurements than during surveys, were discussed. Doc. B:30 presented simultaneous, multifrequency observations to determine the target strength of mature herring at different frequencies. The recordings were made at 18, 38, 120, and 200 kHz in Ofotfjord, Norway in winter darkness. The results indicated a systematic frequency dependence of target strength with a peak at 38 kHz. Doc. B:29 presented the directional properties of an 18 kHz transducer by comparing computations using a directorial beam pattern model with the manufacturer's specifications. Doc. B:34 presented a hydroacoustic small-scale investigation on pelagic fish schools. Substantial, depth-dependent variations in area backscattering strength were detected. The discussion centred on the use of spatial statistics to explore the spatial structure of the observed populations.

Docs. B:12 and B:38 were read by title.

DOCUMENTS

B:1		Report of Activities, 1992
B:2		Report of the Working Group on Fishing Technology and Fish Behaviour, Gothenburg, Sweden, 19-20 April 1993 + Addendum
B:3 Ref. H		Report of the Working Group on Fisheries Acoustics Science and Technology, Gothenburg, Sweden, 21-22 April 1993
B:4		Report of the Joint Session of the Working Group on Fishing Technology and Fish Behaviour and Working Group on Fisheries Acoustics Science and Technology, Gothenburg, Sweden, 20 April 1993
B:5		Report of the Study Group on Research Vessel Noise Measurement, Gothenburg, Sweden, 19 April 1993
B:6		Withdrawn
B:7 Sess. T	B. Nakashima and G.A. Borstad	Detecting and measuring pelagic fish schools using remote sensing techniques
B:8	G. Paterakis and S. Georgakarakos	"School": a software for fish school identification
B:9	J. Haralabous and S. Georgakarakos	Fish-school species identification using a neural network
B:10 Ref. J+M	A.L Toivonen and R. Hudd	Survival of undersized salmon after release from the trap net
B:11	V. Moderhak	Some problems of water flow through the trawl codend

B:12 Ref. J	J. Zaucha *et al.*	Preliminary studies of selectivity of cod gill nets in the Baltic
B:13	B. van Marlen *et al.*	EC-Project TE-2-554 - improved selectivity of fishing gears in the North Sea fishery-beam trawling
B:14	P. Suuronen *et al.*	Survival of Baltic herring (*Clupea harengus* L.) escaping from a trawl codend and through a rigid sorting grid
B:15 Ref. K	P.J. Dare *et al.*	The efficiency of spring-loaded dredges used in the western English Channel fishery for scallops, *Pecten maximus* (L.)
B:16 Ref. D,G,H, J,K,N	O.A. Misund and A. Aglen	On the shape, size and density of North Sea herring schools as mapped by echo integration and accurate sonar projection
B:17	B. Totland and O.A. Misund	Computerbased detection of schools for counting, quantification of size and swimming behaviour by the Simrad SA950 sonar
B:18	A. Engås and E. Ona	Experiences using the constraint technique on bottom trawl doors
B:19 Ref. H	O.R. Godø and J.W. Valdemarsen	A three lëvel pelagic trawl for near surface sampling of juvenile fish
B:20 Ref. K	R.P. Briggs and J.H.B. Robertson	Square mesh panel studies in the Irish Sea *Nephrops* fishery
B:21 Ref. D,G,H, J,K,N	K. Korsbrekke and O.A. Misund	On subjectivity in the judging of acoustic records; comparison of degree of homogeneity in allocation of echo values by different teams
B:22 Ref. F	Å. Bjordal	Capture techniques for wrasse (Labridae)
B:23	Å. Bjordal *et al.*	A new radio link telemetry positioning system. Experiences from tracking of fish and crustaceans
B:24		Withdrawn
B:25 Sess. T	T. Lindem and D. Al Houari	EP-500 - a system for processing and presentation of echogram data produced by the SIMRAD EY-500/EK-500 echosounders
B:26		Withdrawn
B:27	P.A.M. Stewart	Fish capture research - needs and opportunities
B:28 Sess. T **Poster**	R.J. Korneliussen	Advances in Bergen echo integrator
B:29	K.G. Foote	Directional properties of an 18-KHZ transducer
B:30 Ref. H	K.G. Foote *et al.*	More on the frequency dependence of target strength of mature herring
B:31		Withdrawn

B:32 Ref. D,G,H, J,K,N	J. Massé and N. Retière	Effect of the number of transects and identification hauls on acoustic biomass estimates when several species are present in an area
B:33	K. Lange	Design and construction of cambered V-doors
B:34 Ref. H+J	E. Götze *et al.*	Hydroacoustic small scale investigation of pelagic fish stocks
B:35 Ref. K	J.W. Valdemarsen *et al.*	Grid devices to select shrimp size in trawls
B:36		Withdrawn
B:37		Withdrawn
B:38 Ref. E+L	M.J. Kaiser and B.E. Spencer	A preliminary assessment of the immediate effects of beam trawling on a benthic community in the Irish Sea
B:39		Withdrawn
B:40 Ref. H	P. Reynisson	*In situ* target strength measurements of Icelandic summer spawning herring in the period 1985-1992

HYDROGRAPHY COMMITTEE

Chairman: Prof. T. Osborn
Rapporteur: Mr D.J. Ellett

Committee Business

The Committee met on 25 and 27 September 1993 under its Chairman, Prof. Osborn. Mr D.J. Ellett was appointed Rapporteur.

Following the presentation of Docs. Gen:4 and Gen:6, it was felt timely to discuss the role of the Committee. Detailed discussion centred upon the dichotomy between the need to provide advice and participation in interdisciplinary work, and the need to wholeheartedly pursue physical oceanographic programmes.

There was a degree of feeling that the former was currently the major effort of the Hydrography Committee in comparison with the lead taken in earlier years in physical projects such as the overflow experiments and the Greenland Sea Project. ICES involvement in large-scale projects such as WOCE and CEC initiatives was indirect. However, it was pointed out that such work was raised at Committee meetings and in Working Groups and much informal cooperation was achieved. It was felt that there was a need to raise the visibility of ICES in such projects and to stress in particular the strengths of ICES at the regional level. Extensive discussion produced the consensus that the Committee needed to prosecute physical science in order to give the best advice, and that high-quality oceanographic work should be presented at the Statutory Meeting together with interdisciplinary studies. The close relationship between the WGSSO and the SGDAB was cited as a successful demonstration of cross-fertilization.

The need to keep the existing Working Groups under review was stressed, but it was felt that they evolved and changed quite effectively to meet new circumstances. In some cases, Working Groups, such as that for Marine Chemistry, successfully covered the need for a separate Committee.

The form of presentations to the Committee was also discussed at length. This year there had been Theme Session papers, papers with poster presentation, and posters alone. Although there were some arguments for restricting the number of papers sent to the meeting, it was felt that this would discourage attendance, especially of younger workers. Another aspect was the ability to disseminate novel results rapidly. No consensus emerged as to the best future format for presentations, although paper presentation was largely favoured.

Working Group Reports

The **Working Group on Oceanic Hydrography** (WGOH) had met in Aberdeen, Scotland from 21-23 April 1993 and the report (Doc. C:2) was presented by the Chairman, Dr Buch. Recommendations from the meeting were approved following minor changes. In discussion, some concern was expressed that the ICES Data Centre should make a contribution to GOOS in data collection, validation, and exchange, and it was suggested that the Oceanography Secretary should be permitted to liaise with GOOS in the production of ICES time-series and sections for GOOS climate models. It had been queried by ACME whether ICES was fulfilling its role in providing information on changes, and it was suggested that the next WGOH meeting should produce a 2-page report on this matter.

The **Working Group on Shelf Seas Oceanography** (WGSSO) had met in Charleston, SC, USA from 12-13 February 1993 following a Joint Session with the Study Group on the Dynamics of Algal Blooms (SGDAB). The report of the Working Group (Doc. C:3) was presented by the Chairman, Mr H. Dahlin. It was agreed that the interdisciplinary link with the Study Group addressed some basic ICES problems, and that adjacent sessions were again appropriate in 1994. Recommendations from the Working Group were approved after some revision.

The Joint Session of the WGSSO and SGDAB had been reported in Doc. L:7, referred to the Committee. It had been decided to begin pilot studies in three regions: Gulf of Maine, west of Iberia, and the Skagerrak-Kattegat. Plans were described by Mr Dahlin and Ms Reguera and discussed in detail. The WGSSO was providing input to the questions of accumulation, stratification, and advection of blooms. It was agreed that the complexity of the processes required interdisciplinary approaches and the construction of models to answer specific questions raised by the biology. The recommendations for re-establishing the Study Group as a Working Group and for a Workshop and Joint Session with the WGSSO were endorsed.

The **Working Group on Marine Data Management** (WGMDM) had met in Aberdeen, Scotland from 22-24 April 1993. Dr Rickards, the Chairman, presented the report (Doc. C:1). The meeting included a Joint Session with the WGOH at which data collection procedures and data archaeology were discussed. Recommendations were approved unchanged.

The report of the **Working Group on Cod and Climate Change**, which had met in Lowestoft, England from 7-11 June 1993 (Doc. G:3), had been referred to the Hydrography Committee and was discussed. It was agreed that the subject would be appropriate for a Theme Session in the next two years. Discussion emphasized the need for the Working Group to frame specific hydrographic questions compatible with the available data bases. Data sets from the European Centre for Medium Range Weather Forecasts (ECMWF) were suggested as being the most practical available meteorological data sets rather than the 1°x1° sets requested by some Working Group members.

The report of the **Workshop on SKAGEX** held in Lysekil, Sweden from 3-6 November 1992, and of the meeting of the **Study Group on SKAGEX** held in Klapeida, Lithuania from 29 June - 2 July 1993 (Doc. C:4) were read by title. A recommendation to publish the Workshop proceedings was approved.

Discussion of Theme Sessions

Theme Session O on "Dynamics of Upwelling in the ICES Area". Mr A.J. da Silva, one of the Co-Conveners, noted that there had been 24 presentations, largely from the eastern North Atlantic, although there had been valuable contributions for South Africa. It had not been possible to allow more than 10 minutes per speaker, but some papers had also been exhibited as posters, and it was recommended that a selection of the papers should be published in the *ICES Cooperative Research Report* series. Some disappointment was expressed regarding the absence of papers on the ecological aspects of upwelling. Links with non-ICES upwelling programmes (OMEX, MORENA, LOIS, etc.) were noted, and it was felt that a follow-up session would be appropriate in two years.

Theme Session V on "Impact of the 1993 Major Inflow to the Baltic Sea". Discussion was introduced by the Convener, Mr H. Dahlin. The January - August period had been well described and a good picture of the salt exchange and impacts had been obtained. Future progress would be aided by the merging of data sets in the ICES computer. The Committee was very concerned that the 3- to 6-month delays contingent upon obtaining diplomatic clearances for vessel operations in foreign waters had been the sole obstacle to obtaining the complete story of the inflow. In an attempt to reduce these delays in the future, a recommendation calling for action was approved.

Scientific Contributions

Nutrient Sources, Links, Fluxes, and Monitoring. Dr Sætre and Prof. Osborn introduced this topic as a follow-up to previous North Sea nutrient discussions. An important question was how to evaluate any changes resulting from reduced nitrate input to the European seas. One approach may be to closely monitor oxygen consumption in southern Norwegian fjords where renewal of bottom water occurred irregularly. This would provide a measure of eutrophication of the North Sea, since only 10% of the oxygen supply was by mixing, and the rest from occasional flushing. Another suggestion was for optical measurements to determine the quantity of photosynthesis in such areas as the Dutch coast. It was suggested that proposals in a Norwegian paper by Aure and Danielsen should be made available to the WGSSO to assist their consideration of this issue, and this was added to the terms of reference for the next meeting of the Working Group.

A large number of the papers submitted had been presented in Theme Sessions or displayed as posters. Many of the remainder dealing with changes in the North Atlantic were summarized by Dr Buch for general discussion under three headings: 1) convection and flow of convective products; 2) North Atlantic inflows to the Nordic seas; and 3) currents and water masses in the western North Atlantic. An interesting discussion followed, and it was suggested that a Theme Session on North Atlantic changes on decadal scales should be tabled for the 1994 Statutory Meeting.

DOCUMENTS

C:1	Report of the Working Group on Marine Data Management, Aberdeen, Scotland, 22-24 April 1993
C:2	Report of the Working Group on Oceanic Hydrography, Aberdeen, Scotland, 21-23 April 1993
C:3 Ref. L	Report of the Working Group on Shelf Seas Oceanography, Charleston, SC, USA, 10-13 February 1993
C:4	Reports from the SKAGEX Workshop, Lysekil 3-6 November 1992 and the meeting of the ICES Study Group on SKAGEX, Klaipeda, Lithuania, 29 June - 2 July 1993

C:5		Report of the ICES Oceanographic Data Centre
C:6		Withdrawn
C:7		Withdrawn
C:8 Sess. O	J.M. Cotos *et al.*	Upwelling dynamics in Spanish and Portuguese coast. A pilot study from NOAA-AVHRR images and geostrophic winds
C:9 Sess. T	J.M. Cotos *et al.*	Infrared image integration from METEOSAT and NOAA satellites using cross correlation techniques
C:10 Sess. T	J. Torres *et al.*	Follow-up and prediction of upwelling in the Iberian Peninsula west coast using meteorologic parameters, Ekman flux and satellite remote sensing
C:11	H.M. van Aken	Current measurements in the Iceland Basin
C:12 Sess. T	J.W. Ramster *et al.*	The United Kingdom's Digital Marine Atlas (UKDMAP) - an operational tool for fisheries scientists in particular and marine managers and planners in general
C:13		Withdrawn
C:14 Sess. V	A. Zezera and E. Zezera	Recent changes of salinity and its anomalies in the southeastern Baltic (1992-1993)
C:15		Withdrawn
C:16	C.J. de Boer	Water mass distribution in the Iceland Basin calculated with optimal parameter analysis
C:17 Sess. T **Poster**	M. Ostrowski	"SKAGEX Atlas", a software package for the presentation of results of the International Skagerrak Experiment in the Skagerrak 1990-1991
C:18		Withdrawn
C:19		Withdrawn
C:20	E. Buch	The North Atlantic water component of the West Greenland current
C:21		Withdrawn
C:22 Sess. O	R.L. Smith	On the process of upwelling: new observations and understanding
C:23 Sess. T **Poster**	J.J. Bisagni *et al.*	Measurements of temporal changes in the circulation of the Jordan Basin - Maine coastal current system
C:24		Withdrawn
C:25	D.J. Ellett	Transit times to the NE Atlantic of Labrador Sea water signals
C:26 Sess. V	A. Grelowski and T. Wojewodzki	Distribution of highly saline waters observed in April 1993 after the inflow to the southern Baltic

C:27 **Poster**	O. Vagn Olsen	Spatial and temporal variability in winter concentrations of nitrite in Kattegat and the North Sea
C:28 Sess. T **Poster**	C. Roy and R. Mendelssohn	The complete story of the oceans climatic variability at your fingertips: access to the COADS dataset from a microcomputer
C:29	W.R. Turrell *et al.*	Analysis of the historic time-series obtained in the Faroe-Shetland Channel
C:30 Sess. O	E. Hagen *et al.*	A case study of meso-scale motion patterns off the Portuguese west coast
C:31 Sess. O	R. Goward and G. Savidge	The influence of cool water incursions on phytoplankton populations in Bantry Bay, southwest Ireland
C:32 Sess. T **Poster**	D. Whelan *et al.*	An *in situ* and remote sensing study of the near surface water parameters in the Waterford Harbour estuary and the Celtic Sea in June and July 1993
C:33	L. Rickards	The status of data supply to the ICES Oceanographic Databank: the last 25 years
C:34 Sess. O	L. Nykjær and W. Schrimpf	Variability of coastal upwelling and cross-shelf transport off the Northwest African coast
C:35 Sess. T **Poster**	H. Hardarson	The Hugrun family of marine recorders and their applications, showing examples from Iceland and Canada
C:36 Sess. O **Poster**	M. Kahru	Effects of local upwellings on pelagic ecosystems
C:37	J.C. de Munck	Principles of inverse modeling of hydrographic data
C:38 Sess. T **Poster**	T. Knutsen and Y. Følling	Quality control of current measurements made by an Acoustic Doppler Current Profiler (ADCP)
C:39	J. Blindheim and F. Rey	Seasonal variations in the Atlantic inflow to the Nordic seas
C:40	A. Lavin *et al.*	Comparison over time of temperature and salinity at 24.5°N in the Atlantic
C:41	H. Loeng *et al.*	Current measurements in the northeastern Barents Sea
C:42 **Poster**	T. Gytre	An operative system for remote readout of STSD stations via telephone
C:43 Sess. O	M. Mork and A.J. da Silva	Transient upwelling off West Iberia
C:44	K.A. Orvik and M. Mork	Recent investigations of the frontal region in the Norwegian coastal current

C:45	S.-A. Malmberg and J. Briem	Satellite tracked drogue experiments in Icelandic waters in 1992
C:46		Withdrawn
C:47	G. Becker and G. Wegner	North Sea surface temperature means 1981 to 1990
C:48 Sess. V	E. Kleine	Numerical simulation of the recent (1993) major Baltic inflow
C:49		Withdrawn
C:50 **Poster**	H. Giese	Multiparameter water mass analysis with error analysis of tracer data from the eastern Atlantic
C:51 Sess. V	W. Matthäus *et al.*	The major Baltic inflow in January 1993
C:52 Sess. V	W. Matthäus	Major inflows of highly saline water into the Baltic Sea - a review
C:53 **Poster**	R. Tamsalu and K. Myrberg	A baroclinic prognostic model of the Gulf of Finland
C:54	O.V. Titov *et al.*	Results of oceanographic investigations in the northeast Atlantic in spring, 1993
C:55 Sess. T **Poster**	N. Emerson and D. Burns	Computer-aided sea bed classification
C:56		Withdrawn
C:57 Sess. V	B. Broman and H. Dahlin	The flow of water and salt in the sound during the Baltic major inflow event
C:58 Sess. V	H. Dahlin, S. Fonselius and B. Sjoberg	The changes of the hydrographic conditions in the Baltic Proper due to 1993 major inflow to the Baltic Sea
C:59	B. Rudels *et al.*	Greenland Sea deep waters: a report on 1993 winter and spring cruises by RVs "Polarstern" and "Valdivia"
C:60 Sess. O	J.A. Johnson	Modelling coastal upwelling
C:61 Sess. 0	D. Barton	Near surface dynamics of coastal upwelling
C:62 Sess. V	A. Lehmann	Numerical modelling of a major inflow to the Baltic Sea

STATISTICS COMMITTEE

Chairman: Dr M.J. Fogarty
Rapporteurs: Fishery Secretary, Dr W. Gabriel, Mr R. Mayo

The Statistics Committee met in five sessions including two Joint Sessions with other Committees. The Committee also met in its opening session with the EUROSTAT Working Group on Fishery Statistics. One scientific session was devoted entirely to an open discussion of issues related to the Joint Session on "Survey Design and Analysis" held with the Baltic Fish, Demersal Fish, Fish Capture, Pelagic Fish, Marine Mammals, and Shellfish Committees.

Committee Business

The Chairman opened the meeting at 14.30 hrs on 22 September. It was agreed that the ICES Fishery Secretary would act as Rapporteur for the first session.

The Chairman asked the Fishery Secretary to present his Progress Report for 1992/93 (Doc. D:3). The report contained an account of the fisheries data that had been submitted to the ICES Secretariat by national statistical offices up to 1 September 1993. While there had been a small improvement in the submission of preliminary data for 1992, the reporting of STATLANT 27A data continued to be uneven. Several countries had been more than a year late in submitting their data for 1989, 1990, and 1991 and no data had been received for 1989 from Spain, for 1990 from Ireland, Netherlands, and Spain, and for 1991 from Ireland, Netherlands, and Spain.

The Fishery Secretary explained that this had held up the publication of *ICES Fisheries Statistics* for these years and provision of up-to-date data, both to ICES Working Groups and to comply with outside requests, was becoming increasingly difficult.

In responding to Council Resolution 1992/4:2, the Fishery Secretary considered that it would be better to concentrate on the timely submission of the existing STATLANT 27A data than to make changes (e.g., incorporation of monthly data) at this stage. This had been agreed for the time-being at the Inter-Agency Consultations of the Coordinating Working Party on Fishery Statistics (CWP) held just prior to the Statutory Meeting. It was indicated, however, that a change to incorporate high-seas fisheries data would be discussed at the next meeting of the CWP in 1994. The Committee agreed that ICES should be represented at this meeting by the Chairman of the Committee, the Fishery Secretary, and a representative of a Member Country.

The Fishery Secretary also reported on changes that had been made to the ICES computer facilities and fishery data bases, and noted that there had been proposals for other data bases to be held at ICES.

The Chairman opened the Joint Session with the EUROSTAT Working Group on Fishery Statistics by stressing the Committee's concern about the quality of fishery statistics and by providing an example showing the effect of incomplete data on the results of an assessment, notably on the estimate of fishing mortality rate. He then welcomed the members of the EUROSTAT Working Group and asked Mr D. Cross (EUROSTAT) to address the meeting.

Mr Cross thanked ICES for its ready agreement to hold a Joint Session. He noted that the deterioration in the quality of the official statistics was associated with the present "production-managed" system, i.e., TACs, and stressed the need to convince officials of the need for accurate data by providing further examples of the effect on the assessments of using only official statistics. Ultimately, however, it was suggested that it would be necessary to identify the benefits of more reliable assessments to those who use the resource before compliance in the recording of accurate statistics was likely to be achieved. The potential for improvement resulting from the introduction of property rights in fisheries was mentioned as one possibility, but it was agreed that this also needed strict enforcement.

The Committee commented that inaccuracies in fisheries data affected those stocks which were assessed by sequential population analysis, i.e., most of the stocks assessed in the ICES area. It was pointed out that the effect of incorrect data could be different in different situations and that the effects could be counter-intuitive, but that it was an insidious problem which undermined the credibility of advice from ICES. Since the problem was essentially unquantifiable, however, an exercise to compare assessments made using official and unofficial data may not be particularly helpful and in any case this exercise had been carried out by the Working Group on Methods of Fish Stock Assessment in 1987. Instead, simple, strongly-worded statements about the effects of bad data on assessments were more likely to succeed.

It was generally agreed that the problem of underreporting and misreporting was related to the management system in place. Although the use of fishery-independent assessment methods could to some extent make up for the inadequacies of the catch data, it was pointed out that catch data were essential for a proper assessment and that

VPA was much more cost effective when it could be used.

The problem of incomplete and unreliable fisheries data was not new, and concern had been expressed for decades. In view of this, it was suggested that systems for sampling catch or landings might be more successful than the total census methods that were used in most cases at present. This suggestion was not ruled out, but it was commented that institutional arrangements were already in place to record landings and that a catch-based management system required a total census for control purposes. Nevertheless, there may be a case for using alternative statistics, e.g., trade and export/import statistics, to check the reliability of the landings data obtained by conventional techniques. Sampling systems were also required to obtain estimates of "catch" as distinct from "landings", although the possibility of using surveys to estimate discards should be considered.

In addressing the subject of the timeliness of data submission, it was indicated that more time was needed to provide accurate statistics when the quality of the data was poor. In this case, it may be better to use preliminary data and follow this up by an evaluation carried out by scientists in collaboration with the national statistical offices.

Concern was expressed about the dangers associated with data that were acknowledged to be poor both by the scientific community and by the fishermen themselves. This undermined the credibility of the assessments which could eventually lead to a legal challenge to any legislation based on scientific advice. For this reason, some quantitative idea of the scale and extent of the problem was needed.

The view was expressed that there was little more that could be done from within the scientific community and that the only chance of achieving any improvement in the reliability of fishery statistics was to ensure that the present inadequacies were brought to the attention of Ministers. The Committee agreed that a suitably worded recommendation should be made.

The Committee considered four recommendations concerning 1) ICES participation in the CWP meeting to be held in Madrid in July 1994, 2) finalizing plans for a Workshop on Sampling Designs and Analysis for Growth and Maturity Data to be held at ICES Headquarters in February 1994, 3) the proposal that a formal diplomatic letter be sent from the General Secretary to all Member Countries expressing concern over the timeliness and quality of fishery statistics, and 4) a proposal for a Theme Session at the 1994 Statutory meeting on fishery management systems including consideration of the interplay between biological, economic, and sociological considerations. The first three recommendations were passed with minor modifications. The fourth proposal elicited considerable interest and support. However, it was noted that there may not be sufficient time to organize the Session given the need to involve economists and social scientists from outside the ICES system. It was noted that the program should be clearly circumscribed and developed more fully to include management considerations. Finally, it was suggested that the Session be chaired by three scientists representing each of the primary disciplines involved.

The Committee took up the question of whether the name of the Committee should be changed to reflect the changing role and areas of emphasis of the Committee, as suggested in Doc. Gen:6. There was broad support for this proposal. It was suggested that the name be changed to Statistics and Analytical Methods in accordance with the broad range of activities covered by the Committee.

Scientific Contributions

The following scientific contributions were considered within the Statistics Committee exclusive of the Joint Sessions.

Doc. D:32 presented an analysis of variation in yield as a function of size selectivity of the gear fished. In this model, effort was held constant, size selectivity of the gear was converted to age through a growth function and M was allowed to decrease with age up to age 4. Variability in yield was described by the factors H1 and H2 which determined the effect of stochastic recruitment fluctuations on annual yield where H1 was the annual variability factor and H2 the inter-annual variability factor. The model was applied to the North Sea haddock fishery.

Doc. D:17 described a multi-species stock production model. This model introduced the use of a suitability index of prey relative to the predator. Fishing effort was introduced into the model from Fs derived from a VPA and recruitment biomass was obtained from the same source. The model was applied to a population of Baltic cod with the assumption that cod feed on herring, sprat, and "others". F and recruitment were assumed to be proportional to the VPA derived values and the estimated parameters included suitability, q, and a factor associated with recruitment.

Doc. D:27 described a sensitivity analysis of the Western mackerel stock assessment, in particular the bias associated with egg survey estimates of SSB. A model was presented which minimized the sum of squares between the egg production estimates of SSB and those derived from the tuned VPA under several options of terminal F, incorporating a bias or "catchability" coefficient (lambda) which linked indices of SSB to "true" SSB.

Doc. D:57 described the use of Kalman filters for estimating parameters which were non-stationary in which the relationship in one year was affected by events in previous years. The model was applied to growth data for cod in NAFO Divisions 2J, 3K, and 3L. Using this model, it was possible to produce estimates of weight at age for ages outside of the original data set.

Doc. D:13 described a belief network containing a set of interlinked nodes. This was essentially a Bayesian probabilistic approach to reconcile uncertain data available from various sources. Probabilities were assigned to the nodes and strengths to the links. Information was then propagated through the network from the first node to the children. An example was presented based on the Baltic salmon quota decision process using the belief network to merge VPA (mechanical) and regression (statistical) results to produce TAC advice. It was concluded that this approach could be useful to resolve inconsistencies among several models, to assist in predictions by clarifying diagnostics, and to make expert roles more clear.

In Doc. D:28, 100 years of American lobster landings were analyzed to detect the presence of chaotic behaviour. This represented an initial attempt to ask whether chaotic dynamics existed within fishery systems in conjunction with an environmental component. Considerable discussion ensued regarding the extent of chaotic behaviour observed in the data. Better methods were needed to distinguish between the sources of variation, although some models had been developed to distinguish between environmental noise and chaotic behaviour.

The objective of Doc. D:35 was to develop two randomized tests to estimate a) composite population trends and b) a point of change in population status as a result of some intervention. The composite trend was estimated as a weighted average of the slopes of log transformed count date versus time. In the second test, the sampling distributions could be approximated by randomizing the count data and computing new values of the sampling distribution for each iteration. Randomization tests were useful for assessing changes in stock status because such tests required few assumptions, the results were readily interpretable, and the sampling distributions of the test statistic could be easily approximated. The results were applied to Atlantic salmon count data.

Doc. D:67 presented an economic perspective on the traditional yield per recruit curve. Yield was expressed in economic terms and decomposed as fixed and variable costs and profit. Advantages and disadvantages of various fishing mortality reduction scenarios at status quo, 60% of status quo, 40% of status quo, and a gradual stepped reduction were analyzed in terms of net present value discounted at a 25% discount rate. This discount rate was chosen over the more traditional rates of 4-5% to represent the fisherman's view of the present worth of the current fishery. For the highly exploited Irish sea cod, there was a substantial advantage in terms of future revenue of reducing F immediately, whereas for a lightly exploited *Nephrops* stock, there was no apparent advantage to be gained.

Doc. D:43 provided a method to estimate indices of attachment of a fish stock to fisheries zones on a per-recruit basis based on biological indices. The model calculated indices of biomass distribution and biomass production by area on a per-recruit basis. Assuming that the indices of an average year class throughout its lifespan equalled the sum of the respective indices of all year classes in one year, the calculated indices could be used as keys in allocating catch quotas of joint stocks to fishery zones. The model was applied to the northern stock of blue whiting.

In Doc. D:41, a simulation model developed to evaluate the cost effectiveness of various sampling strategies for commercial fisheries was described. The objective was to determine if changes in the sampling scheme, for example from length stratified age sampling to random age sampling, could improve the estimates of catch at age. The model generated a load of fish (R) from a population (P) from which a length sample (S) and an age sample (T) was drawn. The model was applied to the Faroese saithe fishery. The results suggested that random sampling of ages would provide improved estimates of catch at age over a length stratified age sampling scheme, especially if the number of ages per length stratum was low. It was noted, however, that this approach may tend to under-represent the older ages and that there was some advantage in maintaining an approximate constant variance in the catch at age estimates across all ages represented in the catch.

Doc. D:52 reviewed the classic forward age-length key and the modified inverse key and presented a new approach based on the combination of the two methods. The forward key required information from the current year and was more efficient, when appropriate, than the inverse key. The inverse key required estimating more parameters and was less precise, but it avoided the requirement that the sample be drawn from the same population, and took advantage of prior information. The composite method presented in the paper combined the two previously unrelated approaches and allowed one to use previous information whose cost was free. The combined key, however, was based on the assumption of constant growth among years. Some caution was expressed about meeting the constant growth assumption and further testing of the approach was suggested.

Doc. D:48 described a study to determine the number of subsamples required to obtain a given level of precision in fecundity estimates. Two methods of obtaining sub-

samples were investigated: a) constant number of eggs and b) constant volume. The main assumptions in this analysis was that the mass of eggs of a gonad should be normally distributed and independent, the autocorrelation of the mass of single eggs within a subsample could be neglected, and the mean mass of one egg should be normally distributed. The results showed that the total variance of the fecundity estimate was related to the variability in the number of eggs per subsample. It was concluded that using a constant number of eggs per subsample was preferable to constant volume.

Doc. D:55 described a method for correcting for potential bias introduced by length-stratified sampling when computing maturity at age. The proposed method accounted for the bias by weighting the proportions by the catch at length. Examples for cod and American place from the Northwest Atlantic were presented. In general, the differences between weighted and unweighted estimates were small, but some comparisons showed substantial differences.

Doc. D:47 presented a method of gastric evacuation measurement which accounted for all stomach particulate matter that normally passed through collection screens. A nonlinear model was fitted by least squares methods to wet weight and ash-free dry weight from gastric evacuation experiments. Bootstrap and jacknife procedures were used to estimate the variance of the evacuation rates. The generalized model could be used to approximate the joint confidence regions for gastric evacuation rates.

DOCUMENTS

D:1 Sess. T	Z.I. Kizner	On the stability of dynamic surplus production models
D:2	Z.I. Kizner and D.A. Vasilyev	Instantaneous separable VPA (ISVPA) with determination of natural mortality coefficient
D:3	ICES Fishery Secretary	Progress Report 1992/1993
D:4		Withdrawn
D:5		Withdrawn
D:6 Sess. T	G.A.P. Black and R. Mohn	Interactive data visualization of fisheries management systems
D:7 Sess. T	S. Garcia *et al.*	Software for tropical fisheries research: the needs and the response by FAO and ICLARM
D:8		Withdrawn
D:9 Sess. P	B. Mesnil	Using Monte Carlo simulations to account for uncertainties in stock assessments and biological advice for fisheries management. Application to the northern stock of European hake
D:10 Sess. P	W.H. Lenarz	Advice under uncertainty to managers for two fisheries of the northeastern Pacific
D:11 Sess. P	J. Rice	How to reduce the impact of model uncertainty on assessments and advice
D:12 Sess. P	A.A. Rosenberg and V. Restrepo	The eloquent shrug: expressing uncertainty and risk in stock assessments
D:13 Ref. M	O. Varis *et al.*	Belief networks in fish stock assessment - The Baltic salmon case
D:14		Withdrawn

D:15 Sess. T	Y. Morizur *et al.*	An automatic data collection by using bar codes
D:16 Sess. P	Ø. Ulltang	Risk analysis and biological knowledge
D:17 Ref. J	J. Horbowy	The multispecies stock-production model
D:18 Sess. P	A.D.M. Smith	Risk assessment or management strategy evaluation: what do managers need and want?
D:19 Sess. T **Poster**	H. Troadec	TNPC, an assisted system for interpretation of calcified structures
D:20 Sess. T **Poster**	Y. Coupez	Logbook reporting with GIS
D:21		Withdrawn
D:22		Withdrawn
D:23 Sess. T	S. Floen *et al.*	An integrated database for marine research
D:24		Withdrawn
D:25 Sess. T **Poster**	C.T. Macer and R.A. Ayers	Monthly catch prediction software incorporating changes in fishing effort and mesh size using EXCEL spreadsheets
D:26 Sess. P	J. Horwood	Stochastically optimal management of fisheries
D:27 Ref. H	C.D. Darby	The use of spawning stock biomass estimates derived from egg surveys as indices for tuning separable VPA assessments
D:28 Ref. K	G.Y. Conan and F. Söler	Phase-space diagrams, a first approach to chaos modelling of North American landings of *Homarus americanus*
D:29		Withdrawn
D:30		Withdrawn
D:31 Ref. B,G,H, J,K,N	E.J. Simmonds and R.J. Fryer	Survey strategies for structured populations; Part II. Precision of variance estimators
D:32 Ref. B	D.N. MacLennan	Gear selectivity and the variation of yield
D:33		Withdrawn
D:34		Withdrawn

D:35 Ref. M	P.J. Rago	Two randomization tests for estimation of regional changes in fish abundance indices: application to North Atlantic salmon
D:36		Withdrawn
D:37		Withdrawn
D:38		Withdrawn
D:39		Withdrawn
D:40		Withdrawn
D:41	A. Nicolajsen and J.M. Grástein	What is the most cost-effective procedure for sampling landings from a commercial fishery?
D:42 Sess. T	D.R. Smyth	Development of a computerised database system for fisheries research
D:43 Ref. H	J. Hamre	A model of estimating biological attachment of fish stocks to exclusive economic zones
D:44 Sess. T	J.R. Selvik *et al.*	Marine resource data base (MRDB), a database on vulnerable marine resources in Norway
D:45 Ref. B,G,H, J,K,N	K.G. Foote	Abundance estimation of herring hibernating in a fjord
D:46		Withdrawn
D:47 Ref. G	P.R. Garrahan	Resampling techniques used in calculating estimators and confidence intervals of gastric evacuation rates
D:48 Ref. J+G	M. Bleil and R. Oeberst	On the accuracy of cod fecundity estimations
D:49		Withdrawn
D:50		Withdrawn
D:51 Ref. K	J.M. Hoenig *et al.*	Index-removal estimators of population size which incorporate information on sampling gear selectivity
D:52 Ref. G+H+J	J.M. Hoenig *et al.*	Using prior and current information to estimate age composition: a new kind of age-length key
D:53		Withdrawn
D:54 Sess. P	P.A. Shelton and M.J. Morgan	Assessing the risk of failing to achieve replacement recruitment
D:55 Ref. G	M.J. Morgan and J.M. Hoenig	Maturity at age from length stratified sampling
D:56 Ref. B,G,H, J,K,N	W.G. Warren	More on persistence and the potential of sampling with partial replacement

D:57	W.G. Warren	Some applications of the Kalman filter in fisheries research
D:58		Withdrawn
D:59		Withdrawn
D:60		Withdrawn
D:61 Sess. T **Poster**	The Irish Navy and F. Fleming	Using expert systems to preserve fish stocks in Irish EC waters
D:62 Sess. T	G. Garofalo *et al.*	Trawlbase, a configurable database for trawl survey data
D:63		Withdrawn
D:64 Sess. T	G.J. Meaden	Instigation of the world's first marine fisheries GIS
D:65 Sess. T **Poster**	P. Petitgas and A. Prampart	EVA: a geostatistical software on IBM-PC for structure characterization and variance computation
D:66 Sess. P	R.M. Cook	The use of sensitivity analysis to quantify uncertainties in stock projections
D:67	J.P. Hillis	Economic aspects of the yield per recruit curve
D:68		Withdrawn
D:69		Withdrawn
D:70 Sess. P	M. Basson	Risk analysis in fisheries management: the Falkland Islands squid fishery as an example
D:71 Sess. P	R. Shotton	Risk, uncertainty and utility: a review of the use of these concepts in fisheries management
D:72 Sess. T **Poster**	E. Reichelt Russel and P.C. Young	Australian fisheries: stock assessment, resource status, reporting on GIS developments
D:73 Sess. T **Poster**	F. Storbeck	"FISHMAP" - A Mackintosh application for a graphical display of geographical distribution data

MARINE ENVIRONMENT QUALITY COMMITTEE

Chairman: Mr S. Carlberg
Rapporteur: Dr (Ms) M. O'Sullivan

The Chairman welcomed all the participants and Dr (Ms) M. O'Sullivan was appointed as Rapporteur. Dr (Ms) Usha Varanasi, a representative from the Marine Environmental Quality Committee of PICES, the Northern Pacific sister organization to ICES, was welcomed as a special guest.

Committee Business

The Committee met for four sessions on Friday 24 September from 11.30 - 13.00 hrs (44 participants) and from 14.30 - 16.00 hrs (37 participants), Saturday 25 September from 09.00 - 11.00 hrs (38 participants), and Monday 27 September from 14.30 - 16.00 hrs (27 participants). Eleven papers and seven Working/Steering Group reports and recommendations were presented and discussed. In addition, seven papers and six other Working Group reports were also referred to the Committee.

There were two proposals for Joint Committee/Theme Sessions in 1994:

- a Joint Session on "Occurrence and Effects of Contaminants in Marine Mammals" in cooperation with the Marine Mammals Committee;

- a Joint Session on "Quality Assurance of Marine Measurements" in cooperation with the Biological Oceanography and Hydrography Committees.

Other topics suggested were:

- dose-response date for biomarkers and common environmental contaminants;

- new acute and chronic sediment bioassays (techniques);

- monitoring data obtained with water and sediment bioassays.

It was pointed out in discussion that the Committee did not have enough time to address and resolve its own issues. Given the on-going discussion within the Bureau concerning revision and improvements to the Committee structure of ICES and the Statutory Meeting, the MEQC members did not bring forward any additional proposals for Theme Sessions.

The Chairman reported on the first meeting, held in June, of the newly organized Advisory Committee on the Marine Environment which replaced the Advisory Committee on Marine Pollution. This development was intended to strengthen the environmental side of ICES by being proactive in the provision of advice to the regulatory commissions. The ACME view was that MEQC was a scientific Committee whereas ACME was an Advisory Committee that relied on scientific advice. Therefore, ACME felt that there was little overlap between the work of ACME and MEQC and that perhaps the word "Environment" in the name of each Committee had led to some misunderstanding as to the role of each Committee. MEQC shared the view held by ACME. In this regard, one idea had been circulating that MEQC might be replaced by a Marine Biogeochemistry Committee which would have responsibility for areas such as biogeochemical modelling, sediments, baseline studies, and marine chemistry, for which some support was expressed. Others felt that this would be merely a change in name and might result in limited participation. The view had been expressed that as MEQC integrated a wide range of expertise and subject areas, it was at risk of becoming too fragmented and that it might be more appropriate to refer specialized subjects to the relevant Working Group. The Chairman invited the views of the Committee on these issues on an informal basis.

The Report of Activities (Doc. E:1) was presented. Only two contributions had been received which raised the question once again whether the annual reporting served a real need. The main arguments against making national contributions to the report were that the readership and the aim of the report were unclear and non-defined, which meant that the contributions from any given country would only provide a fragmented or sketchy picture. The Committee held the view that this question should be brought to the attention of the Consultative Committee for clarification.

The status of the *Techniques in Marine Environmental Sciences* series in 1993 was reported in Doc. E:2.

Working/Steering Group Reports (Docs. E:3, E:4, E:5, E:6, E:7, E:8, E:9, Env:1, Env:2, Env:3, Env:4, Env:5, Env:6)

The series of "Env" reports (Env:1 - Env:6) were presented to MEQC since they were not being presented in any other fora at the Statutory Meeting. The Committee agreed that it was important that they should consider these reports.

<u>Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea, Gdynia, Poland, 16-19 March</u>

1993 (Doc. E:3), Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea, Gdynia, Poland, 16-19 March 1993 (Doc. E:4), and Joint Meeting of the Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea and the Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea, Gdynia, Poland, 16 March 1993 (Doc. E:9).

The work of these Groups highlighted the importance and attention being given to quality assurance (QA) and its incorporation into the Baltic Monitoring Programme (BMP). QA was now a requirement for all chemical and biological laboratories in the BMP to ensure that relevant and reliable data were produced which would meet the defined aims of the BMP. Clear guidance was particularly needed for QA of biological measurements whereas chemists were familiar with QA requirements. The aim of these developments was to match the progress in the work being done in the North Sea, and the payoff would be clearer routines and more reliable results.

The presentation of these reports produced a very lively and positive discussion on QA which had to be limited because of time constraints. This led to the suggestion to have a Theme Session on QA in 1994.

Steering Group for the Coordination of the Baseline Study on Contaminants in Baltic Sediments, Helsinki, 19-20 April 1993 (Doc. E:5)

The Baseline Study was being undertaken due to the difficulties in comparing monitoring results from laboratories because of the different sampling locations and methodologies used. The logistics of the field work of the study, which was carried out from June-July 1993, were contained in the report, with particular attention being given to QA to guarantee the quality of the work being undertaken. A preliminary report of the first results of the 1993 Baltic Sea Sediment Baseline Study was presented in Doc. E:30.

Working Group on the Baltic Marine Environment, Helsinki, Finland, 21-23 April 1993 (Doc. E:6)

The Working Group had been introduced to the concept of the Large Marine Ecosystem which it hoped to consider as an alternative to the regional approach, as well as the possibility of integrating the existing regional information into a holistic view. Joint activities in the Baltic were reviewed and it felt that more effective coordination of investigations and research was needed and especially that communication between ICES and the EC could be improved. The Working Group had recommended that ICES should attempt to obtain more flexible rules for the access of research vessels to and the conduct of research work in the waters of Baltic Sea countries, at least in urgent cases, but also for marine research in general. The recent salt water inflow was to be followed up. A Baltic 'Hot Line Network' was being established intersessionally.

Study Group on Environmental Modelling of the Baltic Sea (Doc. E:8)

It had thus far been impossible to organize a meeting of this Study Group due to rapid political changes in the eastern Baltic countries and the ensuing organizational and financial difficulties within the marine research community. It was intended to make contact between members by correspondence and to try to organize a Workshop in conjunction with other Baltic Working Group meetings and to cover travel costs for some members with the support of external sources.

Working Group on the Effects of Extraction of Marine Sediments on Fisheries, St. Valery-sur-Somme, France, 12-15 May 1993 (Doc. E:7)

The Working Group had reviewed national marine aggregate extraction information, national seabed sediment mapping programmes, implementation of "black boxes", and beach recharge. Draft guidance on environmental impact assessments for marine aggregates dredging proposals was considered and it was proposed that this guidance should be considered further at the next meeting in light of the experience over the coming year. The results of investigations into the impact of gravel extraction were included in the report. The Working Group felt that its terms of reference should be reviewed and should reflect the full extent of the work currently being carried out.

Marine Chemistry Working Group, Ottawa, Canada, 8-13 February 1993 (Doc. Env:1)

Much of the focus of this Working Group had been on quality assurance/quality control issues in recent years and it was now hoped that a greater emphasis on research might be incorporated into the Group's work to the benefit of both monitoring laboratories and specialized institutes. It was also recommended that more effective communication was needed both at the Working Group level and with ACME.

The progress of three on-going intercomparison exercises on chlorobiphenyls in marine media, hydrocarbons in marine media, and nutrients in seawater was reported.

Working Group on Marine Sediments in Relation to Pollution, Charlottenlund, Denmark, 31 March - 3 April 1993 (Doc. Env:2)

The omission of analytical data for reference materials for a number of data sets had resulted in considerable difficulties in the assessment of the 1990-1991 NSTF Sediment Baseline Study results in which contaminant

data for over a thousand samples had been submitted. As a result, the Working Group had specified guidelines for the use of reference material in sediment monitoring programmes which it felt was necessary. The Working Group had addressed the issues of normalization of trace metal data in sediments using geochemical and mathematical approaches and, also, temporal trend monitoring of sandy surface sediments for trace metals.

Working Group on Biological Effects of Contaminants, Charlottenlund, Denmark, 31 March - 2 April 1993 (Doc. Env:3)

In its role of providing advice on biological effects measurements and how they might be incorporated into monitoring programmes, the Working Group had looked at, *inter alia*, a) the status of EROD intercomparisons and data, b) plans for an intercomparison exercise on Scope-for-Growth measurements, and c) a "Dogger Bank" research proposal to follow up the work of the 1991 ICES/IOC Bremerhaven Workshop.

The results of the 1991 ICES/IOC Bremerhaven Workshop on "Biological Effects of Contaminants in the North Sea" had been published as a special volume in the *Marine Ecology Progress* series (Volume 91, No 1-3, 1992). The support of IOC, ICES, Rijkswaterstaat (Tidal Waters Division - Netherlands), and Nederlandse Aardolie Maatschappij bv in financing unforeseen costs in its publication was acknowledged. Dr Stebbing introduced the "Dogger Bank" research proposal, which was further elaborated in Doc. E:34.

Joint Meeting of MSWG and WGBEC, Charlottenlund, Denmark, 29-30 March 1993 (Doc. Env:4)

This meeting had difficulty interpreting its terms of reference. The meeting had addressed the question of the physical, chemical, and biological characteristics of sediments that could contribute to the interpretation of biological effects (BE) data and sediment contaminant data for assessing environmental quality. The range of bioassay procedures which were available were elaborated on and specific recommendations were made on the coordination of BE measurements and associated sedimentological data.

Working Group on Environmental Assessment and Monitoring Strategies, Copenhagen, 22-26 February 1993 (Doc. Env:5)

The Working Group had devoted considerable time and effort to evaluating Chapters 3-5 in the regional and holistic assessments for the North Sea Quality Status Report. The strengths and weaknesses in both the monitoring and assessment processes had been identified. However, due to time constraints caused by this work, most of the other items on the agenda had to be deferred to the next meeting. The Working Group reviewed the Netherlands document "Seaworthy: Derivation of micropollutant risk levels for the North Sea and Wadden Sea" and concluded that the model needed further validation and that the document should not be seen as a finished product, but as the beginning of a dynamic process.

Working Group on Statistical Aspects of Environmental Monitoring, Copenhagen, 27-30 April 1993 (Doc. Env:6)

The highlights of this year's meeting had included a) the statistically-based graphic presentation of trend data; b) the assessment of the power of the CMP with a recommendation to reconsider the CMP in this context, and c) MANCOVA for analysis of data with unequal residual covariance and regression coefficients. WGSAEM was to produce a non-mathematical manual on the use of MANCOVA and ANCOVA in trend analysis. The remaining unresolved issues included the unequal balance between developments in statistical techniques and their application to existing data; the selection of appropriate statistical methods for specific cases, i.e., when to use MANCOVA or ANCOVA; the increasing demand for statistical assistance from both within and outside ICES; the membership of the Group; and the limited time available to meet requests which related to the extent of national support for intersessional activities.

Scientific Contributions

Strategies for Monitoring, Assessment and Environmental Management (Docs. E:16, E:17, E:18, F:13, J:3, Env:5)

In Doc. E:16, log-transformation was applied to benthic time-series data sets to reveal the underlying trends in the data. This analysis led to suggestions for improved sampling strategy and selection of test sites. It was concluded that it was not necessary to identify species, but it was merely sufficient to distinguish between them.

Doc. E:18 demonstrated that temporal trend monitoring data could be used as a management tool to predict future contaminant levels in relation to environmental quality objectives provided that the trends did not change. In discussion, it was suggested that it would be more productive if more process-oriented research were undertaken, e.g., on sedimentation rates, open sea fluxes, rather than continually placing an emphasis on monitoring and that the same results could have been achieved using a simple model.

Doc. E:17 was presented to outline the Canadian approach to the setting of national sediment quality quidelines for dumping, assessment, and remediation purposes. These were intended to be based on toxicological criteria, but two specific questions were posed in the presentation. First, was it reasonable to assume that no quidelines should be set at natural concentration levels as

established through normalization procedures? Second, as a default in the absence of sufficient toxicological information, for wholly artificial organic substances, could any interim guideline be set at a level comparable with the level of sediment contamination in locations remote from local and regional sources (this was to represent ubiquitous global contamination levels that would not be practical to remediate)? It was pointed out in discussion that acute toxicological data was generally used whereas more data on chronic and sub-lethal toxicity needed to be applied. The paper also argued that the direction now needed to be in the development and application of more sensitive tests and, rather than developing global criteria, that assessments of contaminants and development of criteria should be done at a regional level.

The outcome of the Workshop on Fish Farm Effluents and their control in EC countries was reported in Doc. F:13. It was generally accepted that the fish farming industry needed environmental controls and management, and a three-tier level of responsibility for environmental assessment and regulatory monitoring at international/national, regional, and local levels had been recommended.

A long shopping list of the research needs in the Baltic Sea was identified in the report of the Steering Group on Fisheries/Environmental Management Objectives and Supporting Research Programmes in the Baltic Sea (Doc. J:3). This work had initiated much needed dialogue between scientists and management, but needed to be followed up, with the fisheries side more involved.

Contamination, Contaminants, and their Effects (Docs. E:11, E:22, E:21, E:23)

A report (Doc. E:11) on concentrations of PCBs, HCB, and HCHs in two-year-old herring from the Gulf of Riga in 1992 indicated that levels were similar to those in the Gulf of Finland in 1991, whereas DDT concentrations were somewhat higher. It was suggested that atmospheric deposition of chlorinated hydrocarbons seemed to dominate their input into the Gulf of Riga ecosystem.

In Doc. E:22, the toxic effects of seven herbicides, four insecticides, and a molluscicide were investigated on oyster larvae and two species of marine algae. A wide variety of toxic responses were identified which served to emphasize that the effects of pollutants could not be easily assessed with simple methods.

A comprehensive review on atrazine, a widely used herbicide, in the marine environment was presented by title in Doc. E:21.

Preliminary results of Coastwatch-Europe, a monitoring programme for nutrients and bacteria in small outflows covering 17 countries were presented in Doc. E:23. Pipes and rivers were mostly likely to be involved in or affected by the discharge of sewage, whereas drains were predominantly involved in oil contamination.

Instrumentation (Doc. E:20)

A new *in situ* laser probe for the determination of particle distribution spectra in the sea and total particle load was described in Doc. E:20. It had been used in coastal areas including the west coast of France, the plumes of the Rivers Seine and Elbe, and the Adriatic Sea. It should facilitate the study of sedimentation and flocculation and it could be usefully deployed in offshore waters as well as in productive nearshore coastal waters. **(The author of this paper received the Best Paper Presentation Award in 1993.)**

Enzymatic Techniques (Docs. E:13, E:14, E:15)

A suite of three papers were presented on investigations using biochemical indicators in detecting contamination/pollution by organophosphate and carbamate pesticides (Doc. E:13), PCBs (Docs. E:14 and E:15), and other chlorinated hydrocarbons (Doc. E:15). The acetylcholinesterase inhibition test was used for the determination of organophosphate and carbamate pesticides in sea water and sediments samples from the Belgian coast, seawater and sediments(Doc. E:13). In Doc. E:14, the seasonal variation in EROD activity in dab from the Belgian continental shelf was evaluated and in Doc. E:15, the correlations between EROD and GSH-T activities and organochlorines in liver of dab were examined.

Quality Assurance (Docs. E:3, E:4, E:9)

In addition to these papers, information was provided on the EC QUASIMEME programme. Concern was raised about the possibility of laboratories being "blacklisted" based on their performance. It was stressed that the purpose of QUASIMEME was to lead to improvements in comparability of data and assist laboratories in achieving the same quality of measurement. The value of intercomparison exercises was discussed and it was felt that these needed to be supported/supplemented by workshops. Different levels of precision needed to be taken into account in the absence of defined standard protocols. Most national accreditation programmes did not guarantee the quality of the data and intercalibrations/intercomparisons were important components in the measurement framework. In particular, it was promising to see that the need for QA in biological measurements had been recognized. Clear guidance was needed for QA of biological measurements and progress in area had already been made by taxonomists and phytoplankton biologists. It was felt that these developments should assist in the development of good quality measurements and greater credibility of results.

Sediment Studies (Docs. E:5, E:30, Env:2, Env:4)

The first results of the 1993 Baltic Sea Sediment Baseline Study carried out between 13 June and 9 July were presented in Doc. E:30. The entire Baltic Sea had been covered in the Study which included the Kattegat, Central Baltic Proper, Gulf of Riga, Gulf of Finland, and the Gulf of Bothnia. The bottom topography of the seabed was determined to select sites suitable for sampling. A Gemini double-sediment corer was successfully used for the first time with reliable results being obtained. Radiocaesium analysis was undertaken to identify the Chernobyl (1986) level in the sediments from which an approximate estimate of the sedimentation rate was obtained in order to identify sites with suitable sedimentation rates for reference purposes.

Fisheries, Aquaculture, and the Environment (Docs. B:38, F:13, H:48, K:4, L:4)

These papers were referred to MEQC, but were not presented.

The Braer Oil Spill , Shetland Islands, Scotland, January 1993

Dr Topping gave a detailed presentation on the monitoring programme which had been organized to determine the fate and effects of the oil which had been released into the sea in this incident.

Any Other Business

A brief introduction to PICES, a sister organization to ICES in the North Pacific, was given by Dr Varanasi. Six countries were involved including the USA, Canada, Japan, China, Russia and Korea. It had been in existence for two years and its organizational structure was similar to that of ICES. The next meeting of PMEQC would be held in October 1993 and the agenda included both chemical and biological contaminants (e.g., pathogens).

Dr Lang (Germany) presented an overview of a seagoing BMB/ICES Workshop to be held on board the German R/V *Walther Herwig III* during two weeks in November 1994 (Convenors: Dr Lang and Dr Thulin). It was planned to invite representatives from each of the nine countries bordering the Baltic Sea with priority being given to participants from the eastern Baltic countries. The main objectives of the Workshop were to:

- improve knowledge of the disease status of Baltic flounder, which would be the key species due to its availability at all sampling sites;
- test the applicability of the standard methodology for fish disease surveys recommended by the ICES WGPDMO mainly for the North Sea for Baltic Sea fish (flounder, cod, herring);
- recommend, if necessary, a new standard methodology suitable for the Baltic Sea conditions to be adopted by Baltic countries in present or future disease monitoring.

MEQC strongly supported this proposal, although it would be presented as a formal proposal through another Committee.

DOCUMENTS

E:1	Report of Activities, 1992
E:2 Ref. Pub	Editor's Report on the *Techniques in Marine Environmental Sciences* for 1993
E:3	Report of the Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea, Gdynia, Poland, 16-19 March 1993
E:4 Ref. L	Report of the Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea, Gdynia, Poland, 16-19 March 1993
E:5	Report of the Steering Group for the Coordination of a Baseline Study on Contaminants in Baltic Sediments, Helsinki, Finland, 19-20 April 1993
E:6 Sess. V	Report of the Working Group on the Baltic Marine Environment, Helsinki, Finland, 21-23 April 1993

E:7		Report of the Working Group on the Effects of Extraction of Marine Sediments on Fisheries, St. Valery-sur-Somme, France, 12-15 May 1993
E:8		Brief Report of the Study Group on Environmental Modelling of the Baltic Sea
E:9		Report of the Joint Meeting of the Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea and the Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea
E:10		Withdrawn
E:11	O. Roots and R. Aps	Polychlorinated biphenyl isomers and chlorinated pesticides in the Gulf of Riga herring
E:12		Withdrawn
E:13	K. Cooreman *et al.*	Screening of organophosphate and carbamate pesticides by cholinesterase inhibition
E:14	K. Cooreman *et al.*	EROD monitoring in dab from the Belgian continental shelf
E:15	P. Roose *et al.*	Correlation between EROD and GSH-T- activities and the presence of organochlorines in the liver of dab from the Belgian continental shelf
E:16 Ref. L	A.J.R. Cotter and H. Rees	Univariate approaches to the derivation of quality standards for marine benthos
E:17	J.M. Bewers and J. Karau	Sediment quality guideline development in Canada
E:18	R.J. Fryer and M. Nicholson	Predicting future contaminant levels in relation to EQOs using temporal trend monitoring data
E:19		Withdrawn
E:20	P. Gentien and M. Lunven	New perspectives in coastal marine environment management due to new development in instrumentation
E:21	J. Tronczynski	An overview of atrazine in the estuarine environment
E:22 Ref. K	E. His and M.N.L. Seaman	Effects of twelve pesticides on larvae of oysters (*Crassostrea gigas*) and on two species of unicellular marine algae (*Isochrysis galbana* and *Chaetoceros calcitrans*)
E:23	K. Dubsky	Some preliminary results from nutrient and bacterial contamination studies of small inflows in estuarine and marine areas of six European countries **(Presented orally, no paper received)**
E:24		Withdrawn
E:25 Sess. Q	F. Quiniou *et al.*	Effet de sédiments marins et de leurs extraits aqueux sur la bioluminescence d'une bactérie (MICROTOX R) et sur le développement embryonnaire de bivalves
E:26 Sess. Q	D.R. Livingstone *et al.*	Application of cytochrome P4501A induction as a biomarker for impact by organic pollution in goby (*Zosterisessor ophiocephalus*) and mussel (*Mytilus galloprovincialis*) in Venice Lagoon, Italy

E:27 Sess. Q	A.R.D. Stebbing	Interfacial accumulation of contaminants - is there a problem?
E:28 Sess. Q	J.J. Cleary *et al.*	Surface microlayer contamination and toxicity in the North Sea and Plymouth near-shore waters
E:29 Sess. Q	R.S. Carr *et al.*	Sediment quality assessment studies in Tampa Bay, Florida, USA
E:30	M. Perttilä and L. Niemistö	Selection and characterization of net sedimentation stations for reference use - First results of the 1993 Baltic Sea Sediment Baseline Study
E:31	O. Roots and T. Lukki	Connections autonomous between chloroorganic compounds concentrations in the Baltic herring
E:32 Sess. Q	D.M Lowe *et al.*	Lysosomal membrane danger as an *in vitro* marker of contaminant impact under field and experimental conditions
E:33 Sess. T **Poster**	L. Barratt *et al.*	Environmental sensitivity mapping of the western Black Sea
E:34 Sess. Q	A.R.D. Stebbing	Atmospheric benthic coupling (ABC) - a proposed ICES/IOC research project
Env:1		Report of the Marine Chemistry Working Group, Ottawa, Canada, 8-13 February 1993
Env:2		Report of the Working Group on Marine Sediments in Relation to Pollution, Charlottenlund, Denmark, 31 March - 3 April 1993
Env:3		Report of the Working Group on Biological Effects of Contaminants, Charlottenlund, Denmark, 31 March - 2 April 1993
Env:4		Report of the Joint Meeting of the Working Group on Marine Sediments in Relation to Pollution and the Working Group on Biological Effects of Contaminants, Charlottenlund, Denmark, 29-30 March 1993
Env:5		Report of the Working Group on Environmental Assessment and Monitoring Strategies, Copenhagen, 22-26 February 1993
Env:6		Report of the Working Group on Statistical Aspects of Environmental Monitoring, Copenhagen, 27-30 April 1993

MARICULTURE COMMITTEE

Chairman: Prof. H. Ackefors
Rapporteur: Dr R.H. Cook

The Committee held three sessions and discussed 42 papers, including five Working Group reports and recommendations. A Theme Session on the "Implications of Stock Enhancement of Marine Organisms" was convened by Ms J. Støttrup (Denmark). In addition to the seven reports referred to the Committee, the Chairman informed the members that Docs. B:10, C:12, C:55, D:73, K:4, K:12, K:13, M:14, M:21, M:45, and M:49 were also relevant to Mariculture.

The Chairman noted that some national members or their representatives were not present and pointed out the importance of full participation at the meeting. Reference was also made to Doc. Gen:6 on strategic planning for scientific cooperation and advice and the need for Committee members to consider this report with respect to Mariculture programs.

It was noted that there had been a significant number of meetings and Symposia in the ICES area since the last meeting. A partial list included:

a) World Aquaculture Society/European Aquaculture Society. 26-28 May 1993, Torremolinos, Spain;

b) Fish Farming Technology. 9-12 August 1993, Trondhjem, Norway;

c) Workshop on Fish Farm Effluents and Their Control in EC Countries. 23-25 November 1992, Hamburg, Germany.

The Chairman advised the Committee of the new role of ACME and the developing relationship of this Advisory Committee in the Mariculture area and the activities of its Working Groups, specifically WGEIM, WGITMO, and WGPDMO.

The earlier Mariculture Committee recommendation for an Open Lecture in 1995 on "Benefits and responsibilities on the introductions and transfer of organisms in mariculture", to be given by Dr J. Carlton (USA), was reconfirmed. The issue of ballast water was raised, with the consensus that ICES should take a proactive role in addressing these concerns.

Activity reports were received from 13 members and representatives were invited to comment. Norway reported briefly on its advances in transgenic studies and reported that 20 t of halibut had been commercially produced. Finland advised on some corrections to its statistics (p. 29) and commented on the M-74 problem in salmonid culture and its linkage to environmental pollution.

Publications of interest to Mariculture were received from five members (Doc. F:2). Spain presented a list of over 110 papers of interest to the meeting which were not received in time. In total over 400 titles were identified.

Working Group Reports

The Chairman asked Working Group Chairmen or their representatives to summarize the deliberations and present the recommendations of their respective Group.

Dr H. Rosenthal (Germany) reported on the activities of the Working Group on Environmental Interactions of Mariculture (WGEIM) which would work by correspondence in 1993 (Doc. F:6). He explained the rationale for the name change from "impacts" to "interactions" and that the question raised by NASCO regarding the ecological implications of cultured salmon on wild stocks was a case in point. In addition, he identified the focus by EC countries, Norway, and Canada on coastal zone planning and management, the development of modelling and carrying capacity assessment methodologies, and the use of geographic information systems (GIS) for data base compilations. He also reported on the interactive consultations between WGEIM and GESAMP regarding their initiative on "Environmental Impacts of Coastal Aquaculture" (WG 91).

Dr Rosenthal also reported on the Workshop on Fish Farm Effluents and Their Control in EC Countries held in Hamburg, 23-25 November 1992 (Doc. F:13). Copies of the proceedings were made available and contributed papers to the Workshop would be published in a special issue of the *Journal of Applied Ecology* (Fall 1993). The theme of identifying both the beneficial as well as the adverse impacts was being proposed within an integrated framework of "social monitoring" where technical parameters were balanced with public consultation and participation, and socio-economic and cultural issues were covered.

Dr B. Howell (UK) presented the report of the meeting of the Working Group on Mass Rearing of Juvenile Marine Fish (WGMRJMF) in which 32 scientists representing 12 of the 17 ICES Member Countries had participated (Doc. F:8). Dr Howell advised on the difficulties the Group was having with some of the terms of reference. A Halibut Culture Workshop was not considered

advisable at this time. The Committee concurred with the Working Group recommendations. The Committee Chairman thanked Dr Howell for the good progress achieved at his first meeting.

Upon the Chairman's invitation, Dr R.H. Cook (Canada) presented the report of the Working Group on Genetics (Doc. F:7). The concerns of the outgoing Chairman, Dr Villwock (Germany) were discussed. Of the 23 Working Group members, only five had attended the 1993 meeting in Älvkarleby, Sweden. Nevertheless, several national reports had provided good background information on the progress of genetics research in ICES. The problem of the Working Group covering both fisheries genetics needs (which concerned the understanding of the dynamics of genetic variation in natural fish stocks, stock structure, and biodiversity) and the need for aquaculture genetics (which was concerned with selection and the management of genetic composition towards defined targets related to performance efficiency and production) was identified. In discussion, the requirement for a single Working Group, however, with an appropriate sub-structure to address both fields of genetics applications, was generally agreed. The Committee Chairman would follow up on seeking a redefinition of the role of the Working Group and a new Chairman.

Dr B. Dybern (Sweden) presented the report of the Working Group on Introductions and Transfers of Marine Organisms (Doc. F:3) on behalf of the Working Group Chairman, Dr J. Carlton (USA). Following an overview of the issues being addressed by the Group, there was a discussion regarding the need for the immediate release of the Revised 1993 Code of Practice to Reduce the Risks of Adverse Effects Arising from Introductions and Transfers of Marine Species, Including the Release of GMO (Doc. F:18). Discussion within the Committee stressed the timeliness of the release of this report, however, the Working Group Chairman, in recent correspondence to ICES, had requested that the WGITMO have a further year to take the ACME observations into account and recommend the publication of the Code in 1994. In consideration of the Working Group advice regarding the introduction of *Porphyra yezoensis* to the Gulf of Maine (USA/Canada), the Committee proposed that the WGITMO advice provided to Council be actioned in 1993 as developments regarding the implementation of this introduction were well underway.

The report of the Working Group on Pathology and Diseases of Marine Organisms (Doc. F:5) was presented by Working Group member Dr J. Thulin (Sweden). He also reported on the progress of the Sub-Group which was analyzing fish disease data on the prevalence of diseases of wild marine fish under the chairmanship of Dr A.D. Vethaak (Netherlands). The recommendation of this Sub-Group report would be reviewed by the parent Working Group before presentation to ICES; good progress was being made with the analysis of trends in the prevalence of fish diseases. The WGPDMO was maintaining a close watch on the occurrence of new or changing disease conditions in both wild and cultured marine organisms. Accordingly, current issues such as *Ichthyophonus* in herring, M-74 in Baltic salmon, and *Piscirickettsia* in farmed salmon had been identified. A brief synopsis of the M-74 problem with Baltic salmon was presented and the measures now being put in place to coordinate the research on this issue. In conclusion, the WGPDMO confirmed its abilities to address both the wild and cultivated species issues within its current Working Group structure.

Scientific Contributions

Two papers relevant to the question of phytoplankton species associated with the introduction of the Pacific oyster to Ireland were presented and discussed (Docs. F:26 and F:27). Sixty-seven species of phytoplankton in addition to other microspecies and different types of dinoflagellate cysts were associated with oyster shipments to Ireland. The possible presence of *Alexandrium* cysts, and the presence of *Crepidula*, *Mytilicola*, and other species found in certified importations free of other species, highlighted the requirement for more attention to be paid to the ecological implication of introductions.

A brief presentation by the Joint Nature Conservation Committee (JNCC) regarding a study of introduced non-native marine species to Britain was announced; questionnaire forms for this study were made available.

There were several papers presented on fish diseases and parasites. The report of the Editor of the *ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish* was noted (Doc. F:16). The approach of more frequent publication of individual *Identification Leaflets* and the replacement of old versions of *Fiches* should improve the usefulness of this series.

The problem of *Ichthyophonus* in herring was described in several papers. The report of the second special meeting on *Ichthyophonus* in herring, convened by Dr A. McVicar (UK) in Aberdeen (UK) from 21-22 January, was noted (Doc. F:9). The seriously infected groups of herring had been identified and evaluated. In the conclusions, it was noted that infection rates had been known to be high in some areas. There was no evidence from catch data that North Sea herring were being seriously affected by *Ichthyophonus* infection. The research papers from this meeting would be prepared for publication as an *ICES Cooperative Research Report*. A meeting in Bergen 1994 was recommended to consider further data bases on this subject. A report on the presence of *Ichthyophonus* and parasites (*Anisakidae*) in herring from Estonian commercial catches was reported (Doc. F:38). A historic perspective of *Ichthyophonus* infestations on

herring in the Western Atlantic was tabled in Doc. F:41. In addition, a paper was tabled from Russian researchers reporting massive infestations in herring in the Norwegian and Barents Sea (Doc. H:12).

Variations on the prevalence of sea lice infestations on Atlantic salmon and rainbow trout in Ireland were reported and discussed (Doc. F:30). In this study, rainbow trout had a much lower prevalence of *Lepeophtheirus salmonis*, however, at another location, there was no clear difference in the prevalence of *L. salmonis* or *Caligus elongatus*. In Doc. F:31, further studies on *C. elongatus* examined the intensity of sea lice infestations in farmed salmon along the Irish coast. Several important observations were reported. Poorly conditioned and sick fish harboured greater numbers of lice and could enhance the transferability of lice to healthy salmon.

A report on *Eimeria sardinae* in herring and sprat in the Gulf of Riga was presented (Doc. F:39) with a discussion on the prevalence and abundance of this parasite since 1991.

A report on the effects of pancreatic disease and IPN on individual growth rates (Doc. F:35) and an excellent paper on the vertical transmission studies on IPNV in Atlantic salmon (Doc. F:36) were tabled. This latter paper concluded that vertical transmission in Atlantic salmon was not proven to date by experiment or by sampling farm broodstock.

The Chairman opened the session on global and strategic trends in aquaculture by referring to a paper presented by E. Hempel to World Aquaculture 1993 in Spain, May 1993. In 1990, the volume of world aquaculture reached just over 15 million t valued at some USD 26.5 million, with estimates of production of 62.4 million t by 2025. The breakdown by geographic area and species indicated considerable scope for growth in the future from the mariculture sector. The paper on mariculture in northern USA (Doc. F:40) suggested that production should expand at a rate of 20% per year, however, in the future, environmental concerns, the availability of feeds and energy, and the management of coastal zones would become the major issues. A strategic overview of mariculture in Canada was presented (Doc. F:43) which provided background on the development of aquaculture and its future directions. The need for improved knowledge of coastal environments, developing a supportive regulatory regime to meet culture objectives, more focused and market driven R + D aimed at reducing production costs, and diversifying species to be cultured were some of the directions identified. A paper on the evolution of oyster aquaculture which outlined the problems and perspective was presented (Doc. F:46). Production of cultured marine molluscs had increased by 1 million t between 1984 and 1990 with global production approximately 3 million t. Statistics presented during this period had shown a constancy of overall oyster production, however, high mortalities had appeared in different countries. Future attention must be paid to improved management of oyster growing areas, research on developing disease resistant strains, and improving knowledge on pathogens.

The Chairman reported on the terms of reference for the new Working Group on Application of Genetics in Fisheries and Mariculture, and asked for comments. In addition, the Chairman suggested a group of Committee members to review the ICES strategic planning document (Doc. Gen:6) and provide a Mariculture Committee response for discussion at the Consultative Committee.

The following papers on fish species were presented. Activity patterns in culture white sturgeon (Doc. F:12) demonstrated a consistent bimodality in motility in morning and evening under different culture conditions. The results stressed the importance of feeding strategies to be adjusted to behavioral patterns in order to reduce feed loss, optimize conversion efficiencies, and improve water quality. A study on bacterial contamination in an integrated turbot culture facility (Doc. F:15) showed that the rinsing of *Artemia* prior to feeding to juvenile turbot virtually eliminated external bacteria. A report on the effects of two artificial diets and a natural starter diet on the survival of white fish larvae (Doc. F:47) demonstrated good survival (>71%) using dry artificial feeds and were practical for large-scale culture applications. A paper reported on the feeding activity and behaviour of trout in net cages using pendulum feeders (Doc. F:48). This study was designed to measure feed wastage in relation to feeding activity and behaviour. A small change in pendulum feeding resulted in a major change in fish behaviour and waste feed. This research was continuing; a video on the experiments visually demonstrated the behaviour modifications identified in the report.

A paper on the culture of *Macrobrachium vollenhovenii* and the growth of various larval stages under different environmental conditions was presented (Doc. F:11). The modelling of various physiological parameters of the Japanese oyster during the tidal cycle was reported (Doc. F:22). A high clogging threshold was observed in comparison with mussels and good progress was achieved in understanding the selection efficiencies for both inorganic and organic matter. In Doc. F:24, the performance of triploid Pacific oysters reared in a high-capacity ecosystem was reported. Triploid oysters grew larger, however, mortality rates were also higher as they seemed more susceptible to stress. Scallop spat production in coastal areas may be enhanced by spat collector placement first at lower depths for growth then raised to upper warmer waters to induce spawning (Doc. F:32). Several papers were presented on toxic phytoplankton blooms. Studies on the new phytotoxin DTX-2 were described (Doc. F:28). A review of the recent shellfish closures in Ire-

land related to DSP, and the extension of algal blooms to the west coast shellfish growing areas was presented (Doc. F:29).

Two papers addressed studies on the direct environmental impacts of salmonid farming. In Doc. F:17, the use of Baltic herring as the basis for fish food was studied giving consideration to such factors as feeding efficiency, dietary content. Reducing the import of fish meals for use in the Baltic was suggested, i.e., better to "recycle" than "import". A presentation on the effect of a strategy of harrowing and fallowing under salmon cages (Doc. F:19) was discussed. The study included the use of a sediment profile camera and the application of an organism-sediment index to describe under cage conditions. A single bay management approach was recommended which included certification of incoming stocks, "all fish in - all fish out" within an area, use of the following and harrowing approach, and the safe disposal of blood and diseased fish.

Committee Business

The Mariculture Committee recommendations were reviewed, with final comments received from members, and adopted.

A document prepared by a sub-group of the Committee stating the working policy of the Committee was discussed by the Committee and adopted as follows:

1. Committee Working Groups form the foundation of the scientific advice and research for Mariculture subject area:

   - Working Group on Pathology and Diseases of Marine Organisms
   - Working Group on Introductions and Transfers of Marine Organisms
   - Working Group on Application of Genetics in Fisheries and Mariculture
   - Working Group on Environmental Interactions of Mariculture
   - Working Group on Mass Rearing of Juvenile Marine Fish

2. Prime role of Committee is to:

   a) coordinate and recommend work plan of Working Groups to Consultative Committee;

   b) respond to requests for advice in areas of expertise from other Committees, including ACFM and ACME;

   c) assess advice received from Working Groups and forward within ICES to requesting body

   d) plan Joint Sessions, Theme Sessions, and Mini-Symposia on topics of interest to Mariculture;

   e) plan Special Topics each year on limited number of subjects for presentation within Committee session at the Statutory Meeting (e.g., consider two subjects on a rotational basis from each of the five Working Groups), papers received on the subject of the Special Topics will be presented; papers on Mariculture (but not on the Special Topics approved by the Committee) will only be tabled and distributed to Committee members.

3. Accordingly, two Special Topics each were proposed for 1994, 1995, and 1996, as follows:

1994

a) "Mariculture and coastal zone management" (Working Group on Environmental Interaction of Mariculture);

b) "Parasites in mariculture" (Working Group on Pathology and Diseases of Marine Organisms);

1995

a) "Ballast water and accidental introductions" (Working Group on Introductions and Transfers of Marine Organisms);

b) "Interactions of wild and farmed salmon" (Working Group on Application of Genetics in Fisheries and Mariculture);

1996

a) "Marine finfish culture" (Working Group on Mass Rearing of Juvenile Marine Fish);

b) "Genetically modified organisms" (Working Group on Application of Genetics in Fisheries and Mariculture).

Dr R.H. Cook (Canada) was elected new Chairman of the Committee. The Chairman thanked all participants and was in turn thanked by the Committee for his many contributions during his term of office.

DOCUMENTS

F:1		Report of Activities, 1992 + Addendum
F:2		Publications of interest to the Mariculture Committee, 1992
F:3		Report of the Working Group on Introductions and Transfers of Marine Organisms, Aberdeen, Scotland, 26-28 April 1993
F:4 Sess. R	P. Sandberg and R. Oen	Economic consequences of large-scale sea-ranching of cod in Norway
F:5		Report of the Working Group on Pathology and Diseases of Marine Organisms, Copenhagen, 15-18 March 1993
F:6 Ref. E		Progress Report of the Working Group on Environmental Interactions of Mariculture
F:7		Report of the Working Group on Genetics, Älvkarleby, Sweden, 8-11 June 1993
F:8		Report of the Working Group on Mass Rearing of Juvenile Fish, Bergen, Norway 24-26 June 1993
F:9 Ref. H		Report of the Second Special Meeting of *Ichthyophonus*, Aberdeen, Scotland, 21-22 January 1993
F:10		Withdrawn
F:11	J. Nast-Willführ *et al.*	Laboratory cultivation and experimental studies of salinity effects on larval development in the Arican River prawn *Macrobrachium vollenhoevenii* (Decapoda, Palaemonidae)
F:12	H. Rosenthal and J. Gessner	Activity patterns in cultured juvenile white sturgeon (*Acipenser transmontanus* Roch.)
F:13 Ref. E	H. Rosenthal *et al.*	Aquaculture and environmental regulations in EC countries: a report on the outcome of a Workshop held in Hamburg 23-25 November, 1992
F:14		Withdrawn
F:15	M. Keskin *et al.*	Pathways of bacterial contamination during egg incubation and larval rearing of turbot, *Scophthalmus maximus*
F:16 Ref. Pub		Report of the Editor of the *ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish* for 1993
F:17	K. Ruohonen and J. Vielma	Baltic herring-based-feeds might help to diminish the nutrient load from mariculture to the Baltic Sea
F:18		1993 Code of Practice to Reduce the Risks of Adverse Effects Arising from Introductions and Transfers of Marine Species, Including the Release of Genetically Modified Organisms
F:19	B. O'Connor *et al.*	The effect of harrowing and fallowing on sediment quality under a salmon farm on the west coast of Ireland

F:20 Sess. R	C. Hvingel and J.G. Støttrup	How do reared turbot adapt to the environment? II. Condition indices
F:21 Sess. T **Poster**	A.M. Cawley and D.M. Kennan	Mathematical modelling - an effective approach to planning and environmental management for the mariculture industry
F:22	L. Barillé and J. Prou	Modelling Japanese oyster physiological processes under natural tidal variation in suspended particulate matter
F:23 Sess. T	S. Wheatley *et al.*	An epidemiological investigation of diseases of farmed Atlantic salmon (*Salmo salar* L.) using a relational data base
F:24	P. Goulletquer *et al.*	Performance of triploid Pacific oysters *Crassostrea gigas* (Thunberg) reared in high carrying capacity ecosystem: survival, growth, and proximate biochemical composition
F:25 Sess. R **Poster**	T.S. Kristiansen and T. Næss	Production and winter survival of diapause eggs from marine calanoid copepods in a big outdoor tank in Norway
F:26 Ref. K+L	J.H.T. O'Mahony	Phytoplankton species associated with imports of the Pacific oyster *Crassostrea gigas* from France to Ireland
F:27 Ref. K	D. Minchin *et al.*	Introductions of exotic species associated with Pacific oyster transfers from France to Ireland
F:28	E. Nixon and B. Taaffe	DSP toxins in Irish mussels and the contribution of a new toxin DTX-2
F:29	D. Jackson *et al.*	The occurrence of DSP toxicity in Ireland
F:30 Ref. M	D. Jackson and D. Minchin	Variation in sea lice infestation on farmed salmonids in Ireland
F:31 Ref. M	D. Minchin and D. Jackson	Studies on *Caligus elongatus* infestations on farmed salmonids in Ireland
F:32 Ref. K	D. Minchin	Scallop spat production within sea-loughs by means of induced synchronised spawnings - a possible solution
F:33 Sess. R	B.R. Howell and S.M. Baynes	Are hatchery-reared sole equipped for survival in the sea?
F:34 Sess. R	T. Svåsand	Are reared organisms suited for release in the wild?
F:35	R.S. Raynard and D.A. Smail	Preliminary appraisal of an experiment investigating the effects of pancrease disease, infectious pancreatic necrosis and double infection on individual growth rates in Atlantic salmon
F:36	D.A. Smail and A.L.S. Munro	Vertical transmission studies on IPNV in Atlantic salmon (*Salmo salar* L.)
F:37	B. Björnsson	Optimal temperature of immature halibut (*Hippoglossus hippoglossus* L.): effects of size
F:38 Ref. J+H	A. Turovski *et al.*	*Ichthyophonus hoferi* and *Anisakidae* larvae in herring and sprat in the northeastern Baltic

F:39 Ref. J+H	A. Turovski *et al.*	*Eimeria sardinae* invasion in herring and sprat in the northeastern Baltic
F:40	W.J. Blogoslawski and J.B. Pearce	Mariculture development in northeastern United States
F:41 Ref. H	C.J. Sindermann and J.F. Chenoweth	The fungal pathogen *Ichthyophonus hoferi* in sea herring, *Clupea harengus*: a perspective from the western North Atlantic
F:42 Sess. R **Poster**	J.T. Nordeide *et al.*	Release of reared juvenile coastal cod (*Gadus morhua* L.) in order to enhance the stock in a fjord
F:43	R.H. Cook and E. Black	A strategic overview of mariculture development in Canada: current status and future directions
F:44		Withdrawn
F:45 Sess. T	T. Lindem and D. Al Houari	Hydroacoustic monitoring of fish in aquaculture - A method for automatic feeding control by detection of fish behaviour
F:46	M. Héral	Evolution of oyster aquaculture: problems and perspectives
F:47	M. Schurno *et al.*	Rearing of whitefish (*Coregonus lavaretus* L. F. Baltica) using two different start dry diets and a zooplankton diet in a brackish water environment
F:48	T. Mäkinen *et al.*	Feed wastage, feeding activity and behaviour of rainbow trout in net cages with pendulum feeders
F:49 Sess. R	J.H.S. Blaxter *et al.*	Report from the Symposium on Sea Ranching of Cod and Other Marine Fish Species, Arendal, Norway, 15-18 June 1993
F:50	H. Rosenthal *et al.*	A report to the General Assembly on the Symposium on Mass Rearing of Juvenile Fish

DEMERSAL FISH COMMITTEE

Chairman: Mr E. Aro
Rapporteur: Dr P. Connolly

The Demersal Fish Committee held three sessions on 24, 25, and 27 September 1993.

The Chairman opened the meeting and Dr P. Connolly was appointed Rapporteur. The agenda was adopted. It was noted that five papers had been shifted to other Committees and Theme Sessions and eight papers had been withdrawn. In addition, 12 papers were not available for presentation. The Chairman drew attention to the awards for Best Paper Presentation, Best Poster Presentation, and Young Scientist and asked for suggestions which should preferably be turned in to him together with some explanatory notes.

Matters Referred by the Consultative Committee

The Chairman referred members to the Report of the Bureau Working Group on Strategic Planning for Scientific Cooperation and Advice (Doc. Gen:6) and the Report of Mid-Term Meeting of the Consultative Committee (Doc. Gen:4). A full discussion took place on the proposed changes to the structures within ICES, and problems associated with the existing practices of the Committee structures were identified and discussed at length.

The Chairman presented the recommendations of the Bureau Working Group relative to proposed improvements to the structure of Statutory Meetings and on the reorganization of the Committees, in particular merging the Demersal, Pelagic, and Baltic Fish Committees into a Fish Ecology Committee and establishing a Fisheries Management Systems Committee. The problems associated with the presentation of a large number of papers to the Statutory Meeting were also brought to the attention of the Committee. The proposals of the Bureau Working Group were then opened to general discussion.

There was general agreement with the need for a more ecological and multi/interdisciplinary approach to the Committee structures of ICES and with the proposed formation of a Fish Ecology Committee. However, several members highlighted the need for a Fish Stock Assessment Committee within the new Committee structure. Concerns were also expressed about the types and numbers of Committees which might be merged and on the relationships between the new Committee structures. For example, what would be the relationship between the Marine Environmental Quality and Hydrography Committees and why only merge the Demersal, Pelagic, and Baltic Fish Committees if the aim were to achieve a multidisciplinary approach?

The point was also made that if there were to be fewer Committees in the future, there should be more Theme Sessions spaced as widely as possible to allow members to attend as many as possible. Those Theme Sessions should also be restricted to invited papers only in order to allow for discussion and comment which was fundamental to the process. Several members commented on the need to make better use of the Poster Sessions. Authors should be present at their posters at selected times, and the poster room should be centrally placed and within easy access to all participants.

The large numbers of papers submitted to the Statutory Meeting and the associated problems and proposed solutions were discussed at length. The increasing number of papers presented at each Statutory Meeting had stifled discussion and comments after each presentation, and members expressed concern at this trend. There needed to be some limitations imposed as it was felt that the Statutory Meetings were approaching the saturation level. The point was made that papers presented at the Statutory Meeting were not actually peer-reviewed publications. However, some members highlighted the value of those papers in that a large amount of data, which may have no other forum for presentation, was both presented and stored within the ICES machinery. The fact that workers could present preliminary data to the Statutory Meeting for comment by colleagues was seen as a valuable aspect of the present structure. Some members suggested that some of the papers could be presented at the appropriate Working Group meeting as working documents and thus relieve pressure at the Statutory Meetings. However, it was pointed out that some papers could be lost since there may not be an appropriate Working Group in which to present the data, and members felt that this point should be highlighted.

The Bureau Working Group had recommended that the number of papers should be limited to 200. Members expressed concern at this development and felt that restrictions should be imposed on the number of papers presented, but not on the numbers of papers submitted to the Statutory Meeting. Members felt that a scheme must be developed to allow for discussion after presentation of papers and for some form of screening of presented papers. All authors would have to comply with deadlines, and Chairmen should limit speakers to the allocated amount of time and encourage discussion after each paper. The present screening of papers remained a problem for Committee Chairmen. Of the 68 papers submitted for presentation to the Committee this year, the Chairman only saw 35 in advance, which was clearly unacceptable

practice by authors and violated ICES protocols. There was also a clear problem in the screening of abstracts received at the ICES Secretariat in the spring preceding the Statutory Meeting. Those abstracts may give no indication of the quality and content of the paper under review. Indeed, this had led to some papers being presented which were inappropriate to their assigned session.

Report of Activities

The Report (Doc. G:1) was presented by the Chairman, who noted that a contribution from the UK (Scotland) was not included this year. However, the UK (Scotland) would provide contributions for 1992 and 1993 in next year's Report. The Chairman commented on the new format of the Report which should make it easier for members to examine the data.

Publications of Interest to the Committee

The Report (Doc. G:2) had not been received by the Committee and was withdrawn. This had happened for the past three years and the Chairman would refer the matter to the Consultative Committee.

Reports of Working, Study, Planning, and Steering Groups

A total of six reports were presented to the Committee.

The report of the Study Group on Stock Identification Protocols for Finfish and Shellfish Stocks (Doc. M:3) was presented by the Group Chairman, Dr K. Friedland. The terms of reference for the Study Group were to review recent advances in stock identification methodology and develop a protocol of stock identification methodology for use by the ICES scientific community.

The Study Group had discussed a range of topics at its inaugural meeting. Discussion areas included recent developments in genetic stock identification techniques, mathematical classification models, multidisciplinary stock identification approaches, and an agreed approach for developing the stock identification protocol. Case studies illustrative of the resolution of allozyme data and examples of stock classification via neural networks and genetics algorithms were presented. It was agreed that the protocol on stock identification methodology should be a comprehensive document integrating state-of-the-art knowledge in stock identification methodology. The Study Group recommended that its next meeting deal with herring stock identification and the interpretation of genetic stock identification data. Also, work on the stock identification protocol should continue with contributions by Study Group members and by correspondence.

The report of the Working Group on Cod and Climate Change (Doc. G:3) was presented by Dr K. Brander. The terms of reference for the Working Group meeting together with the main conclusions and recommendations of the report were highlighted.

The report of the Working Group on Ecosystem Effects of Fishing Activities (Doc. G:4) was presented. The report contained an inventory of ongoing research related to ecosystem effects of fishing activities as reported by members of the Working Group. The Group had worked by correspondence during 1993 with the intent to meeting in 1994.

The report of the Study Group on Beam Trawl Surveys (Doc. G:5) was presented. The Group had made recommendations on improving survey design and analyses and would work by correspondence in 1994. They would meet in 1996 to carry out a further evaluation of survey data and methodology.

The Study Group on the Coordination of Bottom Trawl Surveys in Sub-areas VI, VII, and VIII and Division IXa reported no progress. The Group would continue to work by correspondence and would review progress at next year's meeting.

The report of the Planning Group on the Stomach Sampling Project in 1991 was not presented to the Committee.

The report of the Study Group on Redfish Stocks (Doc. G:6) was presented by the Chairman of the Committee. The main recommendations of the Group were highlighted and the proposed ageing Workshop to be held in 1994 was emphasized.

The Steering Group for the Production and Publication of an Atlas of North Sea Fish had no report, but a poster was presented. The Atlas had now been produced as *ICES Cooperative Research Report* No. 194, which was available for purchase, and members agreed that it was a very valuable publication.

Posters

Eight posters were presented on topics concerning software (Docs. G:9, G:16, G:23, G:29), tags and fish behaviour (G:26), depth and spatial distribution (G:43, G:55) and image analysis (G:35).

Scientific Presentations

Early Life Stages and Reproductive Dynamics

Six papers dealt with early life stages and reproductive dynamics of fish.

Doc. G:10 did not arrive and was withdrawn. Docs. G:64 and G:58 were read by title only.

Doc. G:41 used a new method for determining the stage of spawning in batch spawners and found a positive correlation between the length of Arcto-Norwegian cod females having spawned 25-75% of their eggs and the egg diameter. Results on the maternal effect of individual changes in egg characteristics during spawning were also presented.

Doc. G:28 presented data on the early life stages of sea trout in South Florida. In order to secure fertilized eggs, spawning sites were identified using sonargrams to locate the spawning grunts of males. The effects of salinity on egg sizes were also presented.

Doc. G:25 investigated the time at first maturity in sole from the North Sea and English Channel and indicated that weight was an important factor in governing the time of maturity.

Growth and Growth Patterns

There were three documents on growth and growth patterns.

Docs. G:8 and G:66 were not received by the Chairman and were withdrawn.

Doc. G:12 reviewed the length distributions of commercial landings from bottom trawls and small gillnets, and of groundfish survey catches in Galicia. The results had lead to a new hypothesis about the individual growth of young hake from the southern stock (ICES Divisions VIIc and IXa).

Age Determination

Doc. G:45 was not received by the Chairman and was withdrawn.

Feeding Strategies and Predator-Prey Interactions

Nine papers were presented on this subject area.

Doc. G:49 was not received by the Chairman and was withdrawn. Doc. G:60 was read by title only.

Doc. G:22 presented data on cod and haddock feeding in the North Sea in 1981. The emphasis was on attempts to identify the influence of geographical area, season, and body size on feeding. There was strong evidence of a north/south division of feeding which would justify the development of area-based multispecies models.

Docs. G:13, G:14, and G:15, which were presented together, gave results on the feeding of cod, grey gurnard, and ray species in the North Sea in 1991. Compared to 1981, the amount of commercially important fish preyed upon by cod in the North Sea had increased. Grey gurnard were estimated to consume 700,000 t of fish in the North Sea, which implied that this species consumed roughly the same amount as estimated for the whiting population in 1981 and considerably more than the haddock population. The data presented for the ray species represented the first analyses of the food and feeding of four species of ray in the North Sea.

Doc. G:32 compared the feeding habits of Greenland cod and Atlantic cod taken by the longline fishery in West Greenland. The diets were found to be very similar.

Doc. G:37 presented data on predator/prey size patterns of cannibalism by silver hake. This paper, although presented, had not been received by the Chairman.

Doc. G:27 examined opportunistic feeding on benthos by fish after the passage of a 4-m beam trawl. The authors concluded that predatory fish capitalized on animals killed or disturbed from their burrows or other smaller predators that moved into a recently trawled area. Food generated by beam trawling could provide a significant component of the diets of certain opportunistic fish species in some areas subject to intensive beam trawl activity.

Migration

Doc. G:65 examined the migration of Greenland halibut in the Northwest Atlantic using tagging experiments in West Greenland fjords. Of 959 Greenland halibut tagged in the southern fjords, seven long-distant migrants were recorded, while of the Greenland halibut tagged in the northern fjords, all recaptures were recorded at the tagging site or more rarely within a distance of 50 nm from the tagging site.

Mortality

Doc. G:24 estimated the discard mortality of plaice from small otter trawlers using tagging and cage survival studies. Results indicated that the short-term survival of discards from light otter trawl gear was high. Estimates of longer-term survival, derived from the recapture rate of tagged discards, confirmed that survival was likely to be about 50% and could be substantially better.

Distribution Patterns, Stock Identification, Stock Assessment and Abundance

Thirteen papers were presented on these topics.

Docs. G:57 and G:59 were read by title only. Docs. G:7, G:46, G:39, G:38, and G:62 were not received by the Chairman and were withdrawn.

Doc. G:67 presented a report on the 0-group fish survey in Iceland and East Greenland waters in August 1993. The 1993 abundance index of cod was rather low, al-

though considerably higher than in the last seven years. The abundance index of haddock was about average for the last ten years and that for capelin was high. The abundance index for redfish was low. The Chairman commended the quality of the presentation and the analysis of survey data only collected in August 1993.

Doc. G:36 presented estimates of abundance and biomass of long rough dab in the Barents Sea and adjacent waters based on Norwegian and Russian bottom trawl survey data for the period 1980-1992. Population abundance and biomass were reduced by 50% of the long-term average during 1986-1988 which may reflect changes in availability of the population to the survey gear.

Doc. G:68 described the fishery and assessment problems of the stock of southern hake in the waters off Argentina and Uruguay.

Doc. G:19 presented data on the CPUE of anglerfish in the Western English Channel and Celtic Sea.

Doc. G:20 presented a conversion factor between tail weight and gutted weight for anglerfish in order to permit comparison of the landings from the North Britanny coast where anglerfish were landed as tails or gutted fish.

Doc. G:42 examined French catches of ling from ICES Division VIIe. The stock was exploited by trawls, nets, and longlines. Catches were greater by trawling when fishing occurred on the spawning grounds of South Cornwall. The data indicated the stock to be overexploited.

Biology of Spiny Dogfish

Five papers were presented on this topic.

Doc. G:53 was not received by the Chairman and was withdrawn.

Docs. G:51, G:52, G:54, and G:50, presented together, related to spiny dogfish and dealt with estimates of life-stage abundance from modal decomposition, reproductive strategies, and the causes of variability in the stock-recruitment relationship and presented a density-dependent Leslie matrix based population model.

Impact of Fishing and Optimization of Gears

Four papers were presented on these topics.

Docs. G:63 and G:17 were not received by the Chairman and were withdrawn.

Doc. G:30 concerned the population genetics of wrasse used as cleaner fish in Atlantic salmon farming in Norway. Genetic studies based on variation in proteins were carried out and polymorphic enzymes of potential use in population studies were identified. Four loci were used to study variation between geographic regions.

Doc. G:31 focused on the impact of a new fishery on the wrasse populations of a small bay in the west of Ireland. Wrasse were used as cleaner fish on salmon farms and a fishery had now developed for these species. Changes in population size and structure were assessed from catch returns and CPUE data. The results were discussed with regard to the future management of the wrasse fishery.

DOCUMENTS

G:1	Report of Activities, 1992
G:2	Withdrawn
G:3 Ref. A+C+L	The main features of the ICES Symposium on Cod and Climate Change, Reykjavik, Iceland 23-27 August 1993
G:4 Ref. A	Report of the Study Group on Ecosystem Effects of Fishing Activities
G:5	Report of the Study Group on Beam Trawl Surveys in 1992, Cuxhaven, Germany, 20-22 April 1993
G:6	Report of the Study Group on Redfish Stocks, Copenhagen, 12-14 May 1993
G:7	Withdrawn

G:8		Withdrawn
G:9 Sess. T **Poster**	S. Mazzola *et al.*	Software package for the assessment of abundance and distribution of demersal fish by fisheries surveys
G:10		Withdrawn
G:11		Withdrawn
G:12	C.P. Alvarez and J.A. Pereiro	Study of the growth pattern of European hake (*Merluccius merluccius* L.) using whole otoliths and length frequency distributions from commercial catches and groundfish surveys
G:13	A. Kikkert	Analysis of the cod samples collected in the North Sea during the 1991 International Stomach Sampling Project
G:14	T. de Gee and A. Kikkert	Analysis of the grey gurnard (*Eutrigla gurnardus*) samples collected during the 1991 International Stomach Sampling Project
G:15	N. Daan *et al.*	Analysis of the ray (*Raja* spec.) samples collected during the 1991 International Stomach Sampling Project
G:16 Sess. T **Poster**	M.A. van der Land and H. Welleman	"Bessie Turf" - a Mackintosh application for on-board registration of survey catches
G:17		Withdrawn
G:18		Withdrawn
G:19	M. Mtimet and S. Fifas	Anglerfish (*Lophius piscatorius*) catch per unit effort de-seasonalization of a Saint-Malo trawler's sample (western English Channel, France)
G:20	M. Mtimet and S. Fifas	Estimation of an anglerfish tail weight to gutted weight factor using biometrical relationships
G:21 Ref. B,D,H, J,K,N	A.J.R. Cotter	Intercalibration of groundfish surveys using regression analysis of year class mortalities
G:22	P.J. Bromley and L.T. Kell	The feeding of cod (*Gadus morhua* L.) and haddock (*Melanogrammus aeglefinus*) in the North Sea during 1981
G:23 Sess. T **Poster**	T.W. Boon	The role of computers in the production of *ICES Cooperative Research Report* "Atlas of North Sea Fishes"
G:24	R.S. Millner *et al.*	Estimation of discard mortality of plaice from small otter trawlers using tagging and cage survival studies + addendum
G:25	K. Ramsay	Factors influencing first time maturity in female sole (*Solea solea* (L.))
G:26 **Poster**	J.D. Metcalfe *et al.*	Data storage tags to be used in studies of plaice migrations in the North Sea
G:27	M.J. Kaiser and B.E. Spencer	Opportunistic feeding on benthos by fishes after the passage of a 4 m beam trawl

G:28	S. Alshuth and R. Grant Gilmore, Jr.	Egg identification, early larval development and ecology of the spotted sea trout, *Cynoscion nebulosus* C. (Pisces: Sciaenidae)
G:29 Sess. T **Poster**	L. Asgeirsson	Precision weighing at sea
G:30		Withdrawn
G:31	W. Darwell *et al.*	The impact of a new fishery on wrasse populations in a small bay in the west of Ireland
G:32	J.R. Nielsen and M. Andersen	Feeding habits of Greenland cod, *Gadus ogac*, in the Nuuk area, West Greenland
G:33		Withdrawn
G:34		Withdrawn
G:35 Sess. T **Poster**	M.A. Liceaga-Correa and J.A. Diaz-Zavala	Otolith image analysis and its reading with a computer program
G:36	S.J. Walsh *et al.*	Changes in abundance and distribution of the Barents Sea stock of long rough dab, *Hippoglossoides platessoides* (Fabricius), during the period 1980-1992
G:37 Ref. D	R.A. Rountree and M.P. Fogarty	Spatial, temporal and predator-prey size patterns of cannibalism by silver hake
G:38		Withdrawn
G:39		Withdrawn
G:40 Ref. B,D,H, J,K,N	P. Munk	Describing the distribution and abundance of small O-group cod using ring-net sampling and echo-integration
G:41	P. Solemdal *et al.*	Size of spawning Arcto-Norwegian cod (*Gadus morhua* L.) and the effects on their eggs and early larvae
G:42	F. Garcia de Leon *et al.*	Approche multimétier de la lingue franche *Molva molva* en Manche-ouest
G:43 **Poster**	J.C. Poulard *et al.*	Depth and spatial distributions of *Lepidorhombus whiffiagonis* (Walb. 1792) by age group in Celtic Sea and Bay of Biscay
G:44 Ref. B,D,H, J,K,N	M.J. Armstrong and R.P. Briggs	Distribution and growth of haddock of the large 1991 year class in the Irish Sea, inferred from successive groundfish surveys
G:45		Withdrawn
G:46		Withdrawn
G:47		Withdrawn
G:48		Withdrawn

G:49		Withdrawn
G:50	H. Marques da Silva	Estimates of life-stage abundance from modal decomposition of spiny dogfish, *Squalus acanthias*, in the NW Atlantic
G:51	H. Marques da Silva	Reproductive strategies of spiny dogfish, *Squalus acanthias*, in the NW Atlantic
G:52	H. Marques da Silva	The causes of variability in the stock recruitment relationship of spiny dogfish *Squalus acanthias*, in the NW Atlantic
G:53		Withdrawn
G:54	H. Marques da Silva	A density-dependent Leslie matrix population model of spiny dogfish, *Squalus acanthias*, in the NW Atlantic
G:55 **Poster**	H. Marques da Silva	Distribution of spiny dogfish, *Squalus acanthias*, in the NW Atlantic
G:56 Sess. P	F.M. Baldursson *et al.*	On the rational utilisation of the Icelandic cod stock
G:57	M.S. Shevelev *et al.*	Russian investigations on cod and haddock in the Barents Sea and adjacent waters in 1992
G:58	M.V. Kovtsova	Growth rate and maturity of Arcto-Norwegian haddock in 1987-1990
G:59	O.V. Smirnov *et al.*	Results of Russian investigations of Greenland halibut from the Norwegian/Barents Sea stock in 1992
G:60	A.V. Dolgov and K.V. Drevetnyak	Some peculiarities of feeding and food interrelations of deepwater redfish (*Sebastes mentella*) in the Barents and Norwegian Seas
G:61 Ref. B,D,H, J,K,N	K.V. Drevetnyak	Russian investigations of redfish (*Sebastes mentella* Travin) from the Norwegian-Barents Sea stock in 1992
G:62		Withdrawn
G:63		Withdrawn
G:64	S.A. Oganesyan	Periodicity of the Barents Sea cod reproduction
G:65	J. Boje	Migrations of Greenland halibut in the Northwest Atlantic from tagging experiments in West Greenland 1986-1989
G:66		Withdrawn
G:67 Ref. B,D,H, J,K,L,N	J.V. Magnússon and S. Sveinbjörnsson	Report on the O-Group Fish Survey in Iceland and East Greenland Waters, August 1993
G:68	S. Bezzi *et al.*	The fishery and assessment problems of the stock of southern hake *Merluccius hubbsi*

PELAGIC FISH COMMITTEE

Chairman: Mr O. Hagström
Rapporteur: Dr R. Stephenson

The Committee held two sessions (23 and 27 September) and met with other Committees in Joint Sessions. In opening the first session, the Chairman noted that this was a year of record high attendance and numbers of papers, and that there was need, and scope, for discussion regarding the meeting format and future activities of the Committee. The Pelagic Committee meeting time had been reduced to allow participation in two Joint Sessions with other Committees (25 September, "Effects of Oceanographic Factors on Survival and Distribution of Fish", and 27 September, "Survey Design and Analysis") to which Committee members contributed approximately nine papers.

The Committee agenda focused on business items and on papers dealing with a) general biology, b) mackerel/horse mackerel and sardines, c) age determination, d) *Ichthyophonus* epizootic, and e) survey and assessment-related reports.

Committee Business

The Report of Activities (Doc. H:1) was tabled for information. The Chairman reported that most countries had contributed the required information.

The Committee discussed suggestions for Theme Sessions, special topics, and Symposia for future meetings:

- A progress report for the 1994 Mini-Symposium on the "Influence of Large-Scale Environmental Processes on the Migration, Distribution, and Abundance of Atlantic Fish Stocks and their Implication for Management" (Chairman: Dr G.P. Arnold; C.M.1993/A:6) was received.

- The Committee endorsed the proposal for a Theme/Joint Committee Session for the 1994 Statutory Meeting focusing on pelagic fish (juvenile and adult stages) and plankton interactions.

- A proposed Theme Session on "Improving the Link Between Fisheries Science and Management: Biological, Social, and Economic Considerations" was considered to be an interesting and worthwhile topic, but the Committee questioned whether suitable case studies could be available for 1994.

The Committee discussed its future organization and the format of future meetings in light of recent reports on the role and structure of ICES outlined in Docs. Gen:4 and Gen:6. There was general agreement that the number of oral presentations should be reduced and the quality of presentations improved. The Committee felt that this could be accomplished by selection of papers for presentation. Members felt that there was value in distributing a larger number of papers and reports either without presentation or with presentation as posters. The Committee felt that it had made a major advancement this year with its move toward greater Joint Committee/Theme Session involvement with other Committees, but still considered it worthwhile to retain the existing Committee structure to deal with unique pelagic business (organization of surveys, etc.) and issues.

Working/Study Groups and Reports

The Committee endorsed the recommendations and terms of reference for the following Working Groups and Workshops:

- A meeting of the International Bottom Trawl Survey Working Group at ICES Headquarters from 12-14 January 1994 (Chairman: Dr H. Heessen, Netherlands).

- A Workshop on Herring Age Reading to be held in IJmuiden, Netherlands from 20-24 January 1994 (Chairman: Mr A. Corten, Netherlands).

- A Mackerel/Horse Mackerel Egg Production Workshop to meet in Vigo, Spain from 31 January - 4 February 1994 (Chairman: Mr A. Eltink, Netherlands).

- The establishment and meeting of a Study Group on Herring Assessment and Biology in the Irish Sea and Adjacent Areas in Port Erin, Isle of Man, UK from 21-25 February 1994 (Chairman: Dr M. Armstrong, UK).

- A meeting of the Planning Group for Herring Surveys in Bergen, Norway from 24-27 May 1994 (Chairman: Mr A. Aglen, Norway).

The report of the Study Group on Stock Identification Protocols for Finfish and Shellfish Stocks (Doc. M:3) was presented by the Study Group Chairman, Dr K. Friedland. The terms of reference for the Study Group had been to review recent advances in stock identification methodology and the development of a protocol of stock identification methodology for use by the ICES scientific community. Discussion areas at the Study Group's

inaugural meeting had included recent developments in genetic stock identification techniques, mathematical classification models, multi-disciplinary stock identification approaches, and an agreed approach for developing the stock identification protocol. Case studies illustrative of the resolution of allozyme data and examples of stock classification via neural networks and genetics algorithms were presented. It was agreed that the protocol on stock identification methodology should be a comprehensive document that integrated state-of-the-art knowledge in stock identification methodology. The Study Group would welcome contributions for the protocol from the widest possible participation. The Study Group had recommended that its next meeting deal with issues of herring stock identification and the interpretation of genetic stock identification data. In addition, work on the stock identification protocol should continue with contributions by both Study Group members and by correspondence.

The Inter-Committee Recruitment Working Group met during the Statutory Meeting, and Prof. Houde reported that the Group had completed its task and recommended that it be dissolved.

Scientific Contributions

General Biology, Survival, Growth, Feeding

Doc. H:5 presented a reevaluation of the population structure for blue whiting. New genetic (electrophoresis) data from 17 sites showed separation of whiting from the margins of its distribution (Barents and Mediterranean Seas), but no evidence for further separation in the mid-range.

Doc. H:14 described clear seasonal changes in proximate composition of capelin from the Balsfjord stock. Large changes in the round body weight, and in the weight, lipid, and protein fractions of body components were described in relation to age, sex, and seasonally related growth.

Prof. R. Beverton presented a thought-provoking paper (Doc. H:20) on the possible relationship between longevity and maturation in long-lived fishes. Using historical scale ring information for Norwegian spring-spawning herring, "maturation cohorts" (those from within a year class that matured at the same time) were defined and their longevity compared.

Doc. H:47 summarized stock-related changes in the Icelandic summer-spawning herring over a wide range of stock abundance. Weight at age and related parameters had varied somewhat over time, but only at very low stock size was there a real trend (considerable increase).

Doc. H:41 described higher average survival of female than male Grand Bank capelin, presumably related to sex-specific behaviour around spawning. Surviving females were now estimated to comprise 24-47% of the total number of spawners, with significant implications for assessment projections.

Mackerel/Horse Mackerel and Sardine

Mr A. Eltink presented a comprehensive report (Doc. H:4) on the Mackerel/Horse Mackerel Egg Production Workshop held in Aberdeen, 8-12 April 1993, and on the terms of reference for the next meeting (January/February 1994).

Two papers on horse mackerel egg production were presented. Doc. H:17 dealt with the method of fecundity estimation which was an essential prerequisite of the egg production method, and Doc. H:33 described the application of the egg production method to results of two surveys (May 1992) from northern Spain.

The Committee heard two papers (Docs. H:43 and H:44) on mackerel/horse mackerel egg distribution and production from Spanish surveys in 1988, 1990, and 1992 in the waters north of Spain. Doc. H:28 described the distribution and abundance of sardine in acoustic surveys in the same area.

Age Determination

Doc. H:6 presented results of the Blue Whiting Otolith Reading Workshop held in Tórshavn, Faroe Islands, 2-6 November 1992 involving Norway, Russia, Spain, and the Faroe Islands. This, the seventh comparison of blue whiting age reading, showed differences in agreement for both whole and sectioned otoliths.

Doc. H:16 outlined an ageing comparison involving 250 pairs of herring otoliths exchanged among five laboratories in which agreement varied from 70-90%.

The Committee discussed the need for standardization in ageing protocols, further documentation of age reading methodology (including photographs and diagrams of protocols), and ongoing monitoring of agreement ("quality control").

Ichthyophonus Epizootic

The Committee heard a summary of information on the distribution of *Ichthyophonus* based on samples taken during the coordinated acoustic survey in 1992 (Doc H:11). Infection prevalence ranged from 0 in Division VIaN to 5% in Division IVa, with a total area infection level of 4%. The Committee was urged to refer to Docs. H:12 and F:9 and results from the Working Group on Pathology and Diseases of Marine Organisms.

The following papers were tabled, but not presented to the Committee:

Doc. H:21 - A study of first feeding herring larvae during the period 1985-1993.

Doc. H:38 - Batch fecundity and fraction spawning of females from southern Atlantic horse mackerel in Division IXa (Portugal).

Doc. H:39 - Analysis of stomach contents of horse mackerel and mackerel in the Portuguese waters (Division IXa) 1990-1992.

Doc. H:12 - Results of studying epizootic of *Ichthyophonus hoferii* mycosis among Atlanto-Scandian herring.

DOCUMENTS

H:1		Report of Activities, 1992
H:2		Withdrawn
H:3		Report of the Planning Group for Herring Surveys in the North Sea and Adjacent Areas, Aberdeen, Scotland, 2-5 February 1993
H:4		Report of the Mackerel/Horse Mackerel Egg Production Workshop, Aberdeen, 8-12 March 1993
H:5	J. Mork and M. Giæver	The genetic population structure of the blue whiting (*Micromesistius poutassou*)
H:6		Report of the Workshop on Blue Whiting Otolith Reading Workshop, Tórshavn, Faroe Islands, 2-6 November 1992
H:7 Sess. T **Poster**	S. Mazzola *et al.*	A software package to study the dynamics of pelagic ecosystems
H:8		Withdrawn
H:9 Ref. C+M	L.V. Shannon *et al.*	Recent changes in the environment and in the distribution and abundance of pelagic stocks in the southern Benguela region
H:10	T. Monstad and S.V. Belikov	Report of the Joint Norwegian-Russian acoustic survey on blue whiting, spring 1993
H:11	E.J. Simmonds *et al.*	1992 ICES Coordinated Survey of ICES Divisions IVa, IVb, and VIa
H:12 Ref. F	T.A. Karaseva *et al.*	Results from studies of *Ichthyophonus hoferi* epizootic in the Atlanto-Scandian herring
H:13 Sess. T	J.A. Triñanes *et al.*	Monitoring and detection system for operational use in tuna fisheries
H:14	C.C.E. Hopkins and O. Nyholmen	Age, sex and seasonally related growth in body weight and composition in Balsfjord capelin (*Mallotus villosus*)
H:15 Ref. C+M	A.C. Gundersen	Distribution of larval and 0-group capelin (*Mallotus villosus*) in the Barents Sea in relation to environmental factors, 1981-1991
H:16	A. Corten	Results of a comparative age reading experiment on herring from the North Sea and adjacent waters

H:17	A. Eltink and B. Vingerhoed	The total fecundity estimate of western horse mackerel (*Trachurus trachurus* L.) in 1992
H:18 Ref. C+M	A. Corten	Learning processes in herring migrations
H:19 Sess. P	A. Corten	The use of the MBAL concept in management advice
H:20 Ref. G	R.J.H. Beverton *et al.*	The dynamics of maturation in long-lived fish populations II. Norwegian spring spawning herring
H:21	P. Fossum	A study of first feeding herring (*Clupea harengus* L.) larvae during the period 1985-1993
H:22		Withdrawn
H:23 Ref. C+M	D.G. Reid *et al.*	Distribution of North Sea herring and their relationship to the environment
H:24		Withdrawn
H:25 **Poster**	L. Motos	Egg production assessment of the Bay of Biscay anchovy, *Engraulis encrasicholus* L., in 1992
H:26		Withdrawn
H:27 **Poster**	K.L. Elder *et al.*	Using otolith distributions in surface sediments to reconstruct palaeoceanography of the Atlantic U.S. continental margin
H:28	C. Porteiro *et al.*	Abundance estimation and distribution of sardine in northern Spain (north of IXa and VIIIc Divisions)
H:29 Ref. L		Withdrawn
H:30		Withdrawn
H:31 Ref. C+M	R.L. Stephenson	Herring larvae and hydrography: studies and observations from the Bay of Fundy and Gulf of Maine
H:32 Sess. P	R.L. Stephenson and D. Lane	Avoiding the risk of ignoring risk: toward a framework for use of risk in decision making
H:33	C. Porteiro *et al.*	Estimation of biomass of horse mackerel (*Trachurus trachurus*) in northern Spain (northern IXa and VIIIc) using the daily egg production method
H:34		Withdrawn
H:35		Withdrawn
H:36 Ref. B,D,G, J,K,N	H. Dornheim	Abundance of pelagic species, especially mackerel and horse mackerel west of the British Isles and in the Gulf of Biscay in 1992 and 1993
H:37		Withdrawn

H:38	M.F. Borges *et al.*	Batch fecundity and fraction spawning of females from southern Atlantic horse mackerel (*Trachurus trachurus* L.) in Division IXa (Portugal)
H:39	A.G. Murta *et al.*	Analysis of stomach contents of horse mackerel and mackerel in the Portuguese waters (Division IXa), 1990-1992
H:40		Withdrawn
H:41 Ref. D	N.L. Shackell *et al.*	Age and sex-specific survival of Northern Grand Bank capelin (*Mallotus villosus*)
H:42		Withdrawn
H:43	C. Franco *et al.*	Horse mackerel (*Trachurus trachurus* L.) egg distribution and stage I egg production estimates in Divisions VIIIb,c and IXa N in 1988, 1990 and 1992
H:44 Ref. B,D,G, J,K,N	A. Lago de Lanzos *et al.*	Mackerel (*Scomber scombrus* L.) egg distribution and stage I egg production estimates in Divisions VIIIb,c and IXa N in 1988, 1990 and 1992
H:45 Ref. L	S.V. Belikov *et al.*	Preliminary results of the ichthyoplankton survey and observations on the post-spawning migration of blue whiting during April 1993
H:46		Withdrawn
H:47	J. Jakobsson *et al.*	Stock related changes in biological parameters of the Icelandic summer spawning herring
H:48 Ref. B,D,E, G,J,K,N	F. Bingel *et al.*	Distribution of anchovy eggs and larvae (*Engraulis enchrasicolus* Cuv.) in the Black Sea in 1991 and 1992 in comparison to former surveys
H:49 Ref. C+G		Report of the International Bottom Trawl Survey in the North Sea, Skagerrak and Kattegat in 1993: Quarter 1

BALTIC FISH COMMITTEE

Chairman: Mr B. Sjöstrand
Rapporteur: Mr S. Munch-Petersen

The Committee held two sessions and one Joint Session with the Statistics, Demersal Fish, Pelagic Fish, Shellfish, Marine Mammals, and Fish Capture Committees.

The two reports on ICES' future structure and functions (Docs. Gen:4 and Gen:6) were presented. The Committee did not find the suggestion of merging the three Fish Committees into a Fish Ecology Committee to be ideal. Doing so could lead to difficulty in coordinating work related to fish stock assessment, and would make the business work of the present Committees much more difficult. An increased importance of Theme Sessions and Joint Committee Sessions was found recommendable.

The presentation of both the administrative report (Report of Activities in Member Countries) and the list of Publications of Interest to the Committee produced some discussion. The usefulness of the administrative report was questioned since a large part of its contents, i.e., the data on national sampling of fish, was presented in the reports of the relevant assessment Working Groups.

The List of Publications was contrasted with the reference lists for Baltic fish species available in FISHBASE. This global data base on fish was presented by Dr R. Froese in conjunction with Doc. J:29. It was thought valuable to have the Baltic fraction of this data base updated continuously by Committee members and preferably enlarged to comprise references from all Baltic countries.

Dr J. Ahlheit informed the Committee about two initiatives for promoting interdisciplinary research in the Baltic. One was an EC program to support eastern European countries and thereby obtain recommendations for future projects. The other was taken by ECOPS (European Committee of Ocean and Polar Sciences) in arranging a series of workshops on subjects such as salt water intrusions and their consequences for the Baltic ecosystem, benthic processes, and the like.

The Committee was also informed of an initiative to arrange a Symposium in Tallinn (probably autumn 1994) on the topic "Baltic as a Large Marine Ecosystem".

Dr F. Serchuk presented the report from the Steering Group on Fisheries/Environmental Management Objectives and Supporting Research Programmes in the Baltic. The Steering Group gave integrated information from a number of different disciplines in order to identify the most important areas of research in the context of fisheries/environmental management problems. The fishery resources were regarded as the center to which all areas of research were related.

The report of the Study Group on Stock Identification Protocols for Finfish and Shellfish Stocks (Doc. M:3) was presented by the Study Group Chairman, Dr K. Friedland. The terms of reference for the Study Group had been to review recent advances in stock identification methodology and the development of a protocol of stock identification methodology for use by the ICES scientific community.

The Study Group had discussed recent developments in genetic stock identification techniques, mathematical classification models, multi-disciplinary stock identification approaches, and an agreed approach for developing the stock identification protocol. It was agreed that the protocol on stock identification methodology should be a comprehensive document that integrated state-of-the-art knowledge in stock identification methodology. The Study Group would welcome contributions for the protocol from the widest possible participation.

The Study Group recommended that its next meeting deal with issues of herring stock identification and the interpretation of genetic stock identification data. In addition, work on the stock identification protocol should continue with contributions both by Study Group members and by correspondence.

Prof. D. Schnack drew attention to the funding and start, in January 1994, of the internationally coordinated research project on recruitment of cod (discussed at the 1992 meeting).

Study Group reports (Docs. J:4, J:5, and J:7) were presented and discussed. The Study Group on the Evaluation of Baltic Fish Data recommended that the data base from Baltic Young Fish Surveys should be taken over by ICES. It was, however, understood that more such suggestions for data base transformations had been suggested and, therefore, a more general approach to the ICES role as data base depository should be taken. The conclusions from the Study Group on the Biology of Baltic Flounder were that the available material should be sufficient to make assessments for some flounder stocks and that the Study Group was no longer necessary. These conclusions were endorsed by the Committee.

Reports from three hydroacoustic surveys (Docs. J:6, J:15, and J:28) were available, and one (Doc. J:28) presented. The Committee was concerned with the lack

of standardization in methods and in coordination of surveys and recommended that both the Planning Group for Hydroacoustic Surveys in the Baltic and a Workshop on the analysis of flounder survey data should, in their 1994 meetings, suggest improvements.

Growth and Feeding

In Doc. J:19, growth of juvenile cod was dealt with based on determination of daily growth incumbents in otoliths. The paper also elucidated the problems with interpretation of the growth rings in juvenile otoliths.

Docs. J:8, J:24, and J:27 described the apparent changes in growth of herring in the eastern Baltic. The basic observations had been noticeable decreases in mean weight at age in the 1980s as well as stomach contents. It appeared that there was an agreement between the high abundance of *Pseudocalanus* and high growth rates. In the following discussion, it was suggested that inflow of nutrient-rich North Sea water to the Baltic might have an influence on the abundance of *Pseudocalanus*.

Doc. J:12 dealt with the influence of sampling site on estimates of stomach contents in herring.

Doc. J:11 gave the updated data base on cod stomach contents for MSVPA. Special problems occurred due to the available cod age-length keys used for transformation of length to age in cod in cod stomachs because the MSVPA could not cope with fish of same age group preying on each other.

On average, the stomach content seemed to be higher in cod in the western Baltic than in the eastern Baltic. This might be due to the prevailing higher temperature in the western Baltic giving a higher consumption rate.

Reproduction

Docs. J:23 and J:26 gave an overview of herring spawning grounds along the eastern Baltic coast, as well as a description of the decline in number and areas of these spawning grounds in the 1980s. The main reason for the changes seemed to be the decline in the spawning substrata of *Furcellaria*.

Behaviour

What could be evolutionary adaptations of planktonic prey species to avoid or ease the effects of predation by herring was pointed out in Doc. J:20. Eggs of certain copepods were shown to be capable of hatching after they had been eaten and passed through the alimentary system of herring.

Discarding and Distribution

In Doc. J:10, the indices of year-class strength obtained from the Danish discard programme in Sub-division 22 were shown to give very similar results to those from the German Young Fish Survey in the same area.

In Doc. J:13, distributions of flounder and eel pout in the Gdansk Bay were related to depth and fishing pressure.

DOCUMENTS

J:1		Report of Activities, 1992
J:2		List of publications of interest to the Baltic Fish Committee, 1992
J:3 Ref. A,C,E		Report of the Steering Group on Fisheries/Environmental Management Objectives and Supporting Research Programmes in the Baltic Sea, Copenhagen, 17-18 June 1993
J:4		Report of the Study Group on the Biology of Baltic Flounder
J:5		Report of the Study Group on the Evaluation of Baltic Fish Data, Gdynia, Poland, 7-11 June 1993
J:6		Report of the Planning Group for Hydroacoustic Surveys in the Baltic, Copenhagen, 19-20 April 1993
J:7		Report of the Study Group on Young Fish Surveys in the Baltic, Pärnu, Estonia, 24-29 August 1992
J:8	T. Raid and A. Lankov	Recent changes in feeding of herring and sprat in the northeastern Baltic

J:9 Ref. B,D,G, H,K,N	O. Bagge and E. Nielsen	Abundance of 0-group plaice in different areas in the Kattegat and in the Belt Sea in the period 1950-1992
J:10	O. Bagge and E. Steffensen	Danish discards of cod in Sub-division 22 as indicator of strength of year classes
J:11 + Addendum	H. Sparholt	Compilation of cod stomach data for the Central Baltic MSVPA + Addendum: Input stomach data to the central Baltic MSVPA
J:12	J. Ostrowski	Effects of sampling site on the herring food composition in the southern Baltic
J:13	B. Draganik and J. Kuczynski	Spatial distribution of the flounder and viviparous eelpout in the inshore waters of the Gulf of Gdansk
J:14		Withdrawn
J:15 Ref. B	V. Feldman *et al.*	Report of the acoustic survey in ICES Subdivisions 26, 28 in October 1992
J:16	E. Karasseva and E. Zezera	Sprat eggs distribution and abundance in the western Baltic Sea in spring of 1992
J:17	E. Naumenko	Evaluation de la biomasse de population d'éperlan (*Osmerus eperlanus morpha spirincus* Pall.) dans la baille de la Mer Baltique d'après sa base alimentaire
J:18 Sess. R	P.-O. Larsson and J. Pickova	Stock enhancement experiments with cod, *Gadus morhua*, in the Bothnian Sea - conditions and expectations
J:19	T.B. Linkowski and M. Kowalewska-Pahlke	Growth of juvenile Baltic cod estimated from daily growth increments in otoliths
J:20	J. Flinkman	Herring predation avoidance in northern Baltic copepods and mysids
J:21 Sess. V	U. Waller *et al.*	The survival of eggs and the hatching of larvae of cod (*Gadus morhua*) at different oxygen levels
J:22 Sess. V	M. Plikshs *et al.*	The influence of environmental conditions and spawning stock size on the year-class strength of the eastern Baltic cod
J:23	A. Korolev *et al.*	Features of the Baltic herring's spawning grounds in the eastern Baltic
J:24	A. Naglis and L. Sidrevics	The analysis of mean weight-at-age changes of Baltic herring in the eastern Baltic proper, Sub-division 28
J:25	N. Kondratjeva	Biochemical and morphophysiological parameters of Baltic sprat in relation to age and annual cycle periods
J:26	G. Kornilovs	The modern state of Baltic herring spawning grounds in the Gulf of Riga
J:27	M. Fetter and A. Davidyuk	Herring feeding and growth in the Baltic Sea during 1977-1990
J:28	E. Götze *et al.*	Report on the acoustic survey in Sub-divisions 22 and 24 in October/ November 1992

J:29	W. Weber and R. Froese	Synopsis of biological data on *Gadus morhua* L. in the Baltic Sea using the FISHBASE format
J:30		Withdrawn
J:31 Sess. V	O. Bagge	Possible effects on fish reproduction due to the changed oceanographic conditions in the Baltic proper

SHELLFISH COMMITTEE

Chairman: Dr R.C.A. Bannister
Rapporteurs: Mr N. Bailey, Dr J.P. Hillis, and Dr A.C. Jensen

General

The Committee occupied three individual sessions, and two Joint Sessions, one with the Statistics Committee and one with the Fish Capture, Demersal Fish, Pelagic Fish, Statistics, Baltic Fish, and Marine Mammals Committees. The agenda was adopted and the Rapporteurs appointed. The Chairman opened by describing the functioning of ICES and the Committee system, explained the interdisciplinary purpose of the Joint and Theme Sessions, and summarized present discussions about the need for some changes to streamline and simplify the function of the Committee system and the Statutory Meeting. He drew attention to the questionnaire. He summarized the recent role of ACME, including its activities regarding such issues of particular interest to the Shellfish Committee as diseases, transfers and introductions, and the influence of aggregate extraction. Regarding the future of ICES, discussion from the floor and in the margins reflected several strands of feeling. The Shellfish Committee had been very effective in generating a corporate view amongst members, developing new Study Groups of particular relevance to the management of shellfish stocks, and in taking both a biological and numerical view of problems and species. There had also been problems due to parallel sessions at the Statutory Meeting, and the shortage of time for substantive discussion of scientific strategies, papers, and business. Members appreciated the possibility to operate collectively on a wider front via Theme Sessions, etc. but did not wish to lose the identity of the Committee which in recent years had developed a strong sense of purpose, provided a genuine 'home' for newcomers to ICES, and whose discussions had also reflected the interests of shellfish biologists in environmental matters.

Study Groups

The Committee received reports from a number of Study Groups and discussed their future. The Study Group on the Biology, Life History, and Assessment of *Majid* Crabs (Doc. K:3, Chairman: Mr D. Latrouite, France) successfully compared the life history, exploitation, and management of *Maja* and *Chionoecetes*, and listed topics for future work. It was agreed to continue by correspondence in 1994 and to ask that the Group meet again in 1995 in Spain.

The Study Group on Life Histories and Assessment Methods of *Nephrops* Stocks reported on progress by correspondence (Doc. K:6, Chairman: Mr N. Bailey, UK), and outlined important studies on methodology to be undertaken at the forthcoming meeting in Aberdeen in November 1993.

As the Study Group on Life Histories and Assessment Methods of *Pandalus* Stocks in the North Atlantic (Chairman: Mr S. Munch-Petersen, Denmark) had only very recently met, Doc. K:7 was unavailable. It was replaced by a short verbal report outlining the assembly of data and ideas, and recommending continuation by correspondence.

The new Study Group on the Life History, Population Biology, and Assessment of *Crangon* summarized a large amount of life history information and described recent downward fishery trends causing concern (Doc. K:8, Chairman: Dr T. Neudecker, Germany), and it was recommended to meet in 1994 to attempt to clarify remaining life history and assessment questions, and to make management recommendations.

The report of last year's meeting of the Study Group on Cephalopod Biology (Doc. K:66, Chairman: Dr U. Piatkowski, Germany), which met just before the previous Statutory Meeting, had concentrated on the assembly of catch data and reviewed current data, fishery, and assessment problems, which would be pursued by an upcoming meeting of the Study Group, now renamed the Study Group on the Life History and Assessment of Cephalopods.

A report was also received on the meeting of the Study Group on Stock Identification Protocols for Finfish and Shellfish Stocks (Doc. M:3, Chairman: Dr K. Friedland, USA), which planned to develop a written document summarizing the state-of-the-art knowledge in stock identification methodology, and would meet again in 1994 to deal with herring stock identification and the interpretation of genetic data. There had been no shellfish contribution to this Group so far, but on the basis of Doc. K:31 describing stock separation in *Loligo forbesi*, it was recommended that a cephalopod contribution would be desirable.

Following the presentation of Doc. K:62, summarizing the results of recent EC workshops on cockle and mussel recruitment problems, it was recommended to form a new Study Group (Proposed Chairman: Dr R. Dijkema, Netherlands) to pursue investigations into the causes of recruitment fluctuation in bivalves.

Workshops

The Committee discussed the present absence of shellfish assessments in all but the *Nephrops* Working Group. This reflected the difficulties currently associated with the collection and analysis of shellfish time series and biological data, and highlighted the need to find a way of stimulating discussions about shellfish assessment and management at the ICES level. It was recommended that the Working Group on Methods of Fish Stock Assessment should be asked to convene a Workshop in 1995 on the Assessment and Management of Shellfish Stocks.

The Chairman reported on the outcome of this year's Theme Session R on the Implications of Stock Enhancement of Marine Organisms. It was agreed to support a Mariculture Committee recommendation to convene a Workshop in 1994 to review the options and objectives of stock enhancement, identify 'hard' scientific criteria for evaluating the likelihood of successfully enhancing fish and shellfish stocks, and identify priorities for future work. This topic was at a turning point and urgently needed a robust assessment of the future.

Theme Sessions and Special Topics

The Committee discussed the Theme Session on Impacts Likely to Affect Shellfish in Aquaculture and Natural Populations which, last year, had been proposed for 1994. It was agreed that the Theme Session was more likely to attract papers at a Statutory Meeting in Europe, and accordingly it was recommended to delay this Theme Session until 1995 in Copenhagen.

Special topics chosen for the 1994 and 1995 Statutory Meetings were:

- Shellfish assessments;
- Recruitment dynamics in shellfish populations;

Scientific Sessions

Crustacea

In support of the report of the Study Group on the Life History, Population Biology, and Assessment of *Crangon*, Docs. K:53 and K:55 presented additional important information. K:53 reported a trend towards a smaller size composition in the southern North Sea as effort had increased. Length-based methods gave high Z values, and the possibility of bias was discussed. The proportion of egg bearing females had declined. Doc. K:54 estimated *Crangon* abundance by size less and showed that, although the trend in large shrimp was downward, small shrimp abundance was still without trend at present.

For *Pandalus borealis* in the Barents Sea, Docs. K:9 and K:11 described survey results and genetic differentiation. For *Homarus gammarus*, Doc. K:49 showed that lobsters tagged in Poole Bay, southern England, moved only short distances, independently of time at liberty, and Doc. K:29 showed that hatchery-reared lobsters, released in southern Norway in an area where natural stock abundance was very low, were contributing significantly to the catch of some fishermen. For *Cancer pagurus*, Doc. K:23 showed that in French waters female crab matured in the size range 75-105 mm carapace length (mean 85 mm). Carapace aging techniques were used to investigate the time between maturation and the previous moult.

For *Majid* crabs, Doc. K:3 summarized life history data, identifying important differences between *Maja* and *Chionoecetes*, and reviewed the exploitation and management of these species in Europe and Canada, respectively. Doc. K:47 discussed the use of traps to estimate the abundance of snow crab in Greenland, based on assumptions about the area of influence of the trap. Several papers discussed research on reproduction. Doc. K:19 described the reproductive cycle of *Maja squinado* in Galicia using gonad staging combined with histology. The periodicity of snow crab spawning in the Gulf of St. Lawrence was described in Doc. K:26. Spring water temperature was shown to affect hatching of *Maja* in the Channel (Doc. K:50). In Doc. K:22 body measurements were used to distinguish between juvenile and adult *Maja* in the Channel.

For *Nephrops*, Doc. K:5 described the seasonal pattern of size and maturity stage associated with biennial spawning at Iceland. Docs. K:64 and 65, describing length-frequency analysis and growth rate in Irish Sea *Nephrops*, were presented in the Joint Session with the Statistics Committee.

The important problem of aging crustacea received attention. Doc. K:18 illustrated the use of lipofuscin pigment in the brain to age *Nephrops* and *Homarus*, while Doc. K:28 described use of the $^{228}Th/^{228}Ra$ ratio method in *Cancer pagurus*.

Molluscs

For *Mytilus edulis* in the Limfjord, Doc. K:12 measured the yield of undersized mussels sorted, relayed, and harvested. Mortality depended on handling, temperature, and predation, but generally gave a 1:1 relaying/harvest ratio. An associated growth model calculated the trend of biomass and yield over time for blue mussel in the Limfjord, used to identify the best time for harvesting (Doc. K:13). In Doc. K:42, different designs of mussel spat collected were deployed in Schleswig Holstein, the vertical hollow cylinder of gauze proving to be most effective.

For *Crassostrea gigas*, Doc. K:40 compared the energy budget of oysters at three different tide levels by measuring food availability, intake, and scope for growth. A companion paper (Doc. F:22) showed that in *C. gigas*, food was selected not only by particle size, but also by quality. For *Ruditapes phillipinarum*, food removed by upstream animals could cause a gradient to low growth downstream, but this could be prevented by spraying water containing phytoplankton widely across the raceways. Doc. F:45 was also taken, overviewing recent trends in oyster production worldwide, including the impact of parasites and disease, and unknown causes of mortality.

Doc. K:62, summarizing recent poor spatfall in mussels and cockles in northern Europe, showed that spatfall variations were not syndromous everywhere. Winter temperature and predation were offered as factors in determining spatfall abundance, but studies were still not conclusive.

For *Ostrea edulis*, the natural dynamics in Lough Foyle were described in Doc. K:21. Spatfall could be linked directly to the growth of individual cohorts to maturity, interacting with spring temperature. Recruitment forcing, using reared spat, was discussed.

Docs. K:16 and K:17 used shells of the long-lived bivalve *Arctica islandica* to measure environmental phenomena. Damage marks in the North Sea samples showed an upward trend in setup which paralleled the evolution of beam trawl effort (Doc. K:16). Oxygen isotope analysis of samples of shell from a variety of location identified trends in long-term sea water temperature indicative of long-term oceanographic trends (Doc. K:17).

Doc. K:27 described the specific nutritional requirements of two abalone species.

A major group of papers on cephalopods was presented or taken by title. Doc. K:33, summarizing passive assessment methods suitable for short life-cycle cephalopod stocks, was actually taken in the Joint Session with the Statistics Committee.

Doc. K:66, the report of the Study Group on Cephalopod Biology, included the first attempt to collate fishery data for the main species in the North Atlantic. The attempt was seriously impaired by the poor standard of data collection or reporting by many countries. Several papers, read or taken by title, described the general evolution of squid fisheries, viz., Doc. K:51 (French fishery in Bay of Biscay), Doc. K:60 (Algarve, Portugal), Doc. K:38 (Portugal). A useful group of papers described the results of biological sampling of *Loligo forbesi* and *L. vulgaris*. Doc. K:31 used multivariate techniques to analyze samples from 13 different Northeast Atlantic locations and identified only the Azores stock as being clearly separate. On the basis of seasonal landings, maturity stage, and the progression of size composition through time, the annual cycle of maturation in *Loligo* species was described by several papers for several areas; Doc. K:30 (Scottish data for northwest of Scotland), Doc. K:43 (Irish and Celtic Sea), Doc. K:35 (Portuguese coast), and Doc. K:59 (Algarve). The most important feature was a major increase in the proportion of mature squid sampled in autumn and winter, coupled with size composition and other data suggesting that several sub-cohorts may be present through the year. This made attempts to apply length-based analysis extremely problematical (Doc. K:30), but it was agreed that work on this should continue so as to explore the performance of such methods under unhelpful biological circumstances. Doc. K:36 described the population structure for *Alloteuthis* species in Portuguese waters.

Docs. K:56, K:57, and K:58, describing fecundity, maturity, and recruitment of *Loligo forbesi* in Portugal, were taken by title.

The role of squid in trophic relationships was important and three papers discussed squid diet, Doc. K:32 (Scottish waters), Doc. K:44 (Irish and Celtic Sea), and Doc. K:15 (Galicia). All showed similar food preferences comprising fish (including whiting, sand eels, and pout), crustaceans, and a range of other species including, curiously, polychaetes, the latter perhaps at free swimming reproductive stage. There was discussion of the bias which could be occasioned by diet feeding cycles, leading to high proportions of empty stomachs at certain times of the day. There was evidence that small squid preferred crustacea, and large squid fish, because only large squid could move fast enough to capture mobile prey. The Committee heard about a photographic guide key to fish in squid stomachs, prepared by Aberdeen University and based on jaw bones, and it was agreed to recommend its publication by ICES.

The session concluded with Docs. K:37 (fishing trials off Portugal) and K:39 (size selection in bottom trawls off Guinea-Bissau), taken by title. Overall, the session had demonstrated substantial progress in biological and fishery investigations on *Loligo* species across a broad area from north Scotland to Portugal, and illustrated the benefit of the coordinated BC programme, plus the direction coming from ICES in the Study Group on the Life History and Assessment of Cephalopods.

Joint Sessions

Docs. K:24, K:25, and K:34 were presented in the Joint Session on "Survey Design and Analysis" and Docs. K:33, K:20, K:10, K:62, K:46, K:64 and K:65 were taken in the Joint Session on "Dynamics and Analysis of Shellfish Populations" with the Statistics Committee.

DOCUMENTS

K:1		Report of Activities, 1992
K:2		Withdrawn
K:3		Report of the Study Group on the Biology, Life History, and Assessment of *Majid* Crabs, Jersey, Channel Islands, UK, 19-21 May 1993
K:4		Withdrawn
K:5	H. Eiriksson	On the biennial breeding cycle of *Nephrops* at Iceland and how it relates to the fishery
K:6		Report of the Study Group on Life Histories and Assessment Methods of *Nephrops* Stocks
K:7		Withdrawn
K:8		First report of the Study Group on the Life History, Population Biology, and Assessment of *Crangon*
K:9	M. Aschan *et al.*	Results of Norwegian and Russian investigations of shrimp (*Pandalus borealis*) in the Barents Sea and Svalbard area in 1992
K:10 **Poster**	R. Melville Smith *et al.*	Recent changes in the growth rate of the South African spiny lobster, *Jasus lalandii*: possible causes, and management implications
K:11	T. Rasmussen *et al.*	Preliminary investigations on the population genetic differentiation of the deep water prawn, *Pandalus borealis*, Kröyer 1838, from northern Norway and the Barents Sea
K:12	P. Sand Kristensen	Growth and production of small mussels (*Mytilus edulis* L.) sorted and relayed from commercial catches in the Limfjord
K:13	P. Sand Kristensen and H. Lassen	Production in sorted and relayed mussel in Limfjorden, DK
K:14		Withdrawn
K:15	F. Rocha *et al.*	The diets of *Loligo vulgaris* and *Loligo forbesi* (Cephalopoda, Loliginidae) in the Galician waters (NW Spain)
K:16	R. Witbaard and R. Klein	A method to estimate the bottom trawl intensity independently from fisheries itself by using internal molluscan growth lines
K:17 Ref. C+L	Chr. R. Weidman and G.A. Jones	A new high-temporal resolution paleoceanographic tool for the northern North Atlantic: the mollusc *Arctica islandica*
K:18	O. Tully	Morphological lipofuscin (age pigment) as an indicator of age in *Nephrops norvegicus* and *Homarus gammarus*
K:19	E. González-Gurriarán *et al.*	Reproduction of the spider crab *Maja squinado* (Brachyura: Majidae) in the southern Galician coast (NW Spain)
K:20	J.P. Robin and E. Boucaud	Proportion of the squid *Loligo forbesi* and *Loligo vulgaris* in French landings of the Channel bottom trawl fishery; sampling scheme of the Port-en-Bessin landings and preliminary results

K:21 Ref. F	F.B. Mc Kelvey *et al.*	Recruitment potential of native oysters *Ostrea edulis* in Lough Foyle
K:22	D. Le Foll *et al.*	Relations biométriques chez l'araignée de mer *Maja squinado*. Longueur de référence, distinction juvénile-adulte, taille-poids
K:23	D. Latrouite and Ph. Noël	Observations sur la maturité sexuelle et la ponte du tourteau *Cancer pagurus* en Manche
K:24	A.J.R. Cotter *et al.*	An experiment of the effects of tractor dredging on cockles in Burry Inlet, South Wales
K:25 Ref. D	F. Maynou *et al.*	Temporal and spatial structure of crustacean populations on *Nephrops norvegicus* fishing grounds
K:26	P. Mallet *et al.*	Periodicity of spawning and duration of incubation time for *Chionoecetes opilio* in the Gulf of St. Lawrence
K:27	K. Mai *et al.*	Comparative studies on the nutrition of two species of Abalone, *Haliotis tuberculata* L. and *Haliotis discus hannai* Ino.
K:28	C. Talidec and J.L. Reyss	Determination of inter-individual growth variability of the Norway lobster from the Bay of Biscay (*Nephrops norvegicus*) by measurement of the $^{228}Th/^{228}Ra$ carapace ratio
K:29 Sess. R	G. van der Meeren and H. Næss	Lobster (*Homarus gammarus*) catches in southwestern Norway, including the first recaptures of previously released juveniles
K:30	P.R. Boyle *et al.*	Population zoology of *Loligo forbesi* (Cephalopoda: Loliginidae) in Scottish waters
K:31	G.J. Pierce *et al.*	Geographic variation in *Loligo forbesi* in the northeast Atlantic
K:32	G.J. Pierce *et al.*	Diets of squid *Loligo forbesi* and *Loligo vulgaris* in the Northeast Atlantic
K:33 Ref. D	G.J. Pierce and A. Guerra	A review of stock assessment methods used for cephalopod fisheries
K:34 Ref. B,D,G, H,J,N	N. Bailey *et al.*	Estimation of *Nephrops* stock biomass on the Fladen Ground by TV survey
K:35	A. Moreno *et al.*	Population biology of veined squid (*Loligo forbesi*) and European squid (*Loligo vulgaris*) from the Portuguese coast
K:36	A. Moreno	Preliminary study on biological characters of *Alloteuthis subulata* and distribution of the genus *Alloteuthis* (Cephalopoda: Loliginidae) in Portuguese waters
K:37 Ref. B	J.M. de F. Pereira	Squid fishing trials with trawl nets off the Portuguese coast
K:38	M.M. da Cunha and A. Moreno	Evolution of the Portuguese fishery for squid

K:39	J.M. de F. Pereira	Size selection of *Octopus vulgaris* Cuvier, *Sepia officinalis hierredda* Rang and *Sepiella ornata* Rang in bottom trawls off the coast of Guinea-Bissau
K:40	P. Soletchnik *et al.*	Bilan énergetique de l'huître creuse (*Crassostrea gigas*) durant la période de forte croissance en mai en baie de Marennes-Oléron (France)
K:41		Withdrawn
K:42 Ref. B,D,G, H,J,N	A. Pulfrich and M. Ruth	Methods for monitoring spatfall of mussels (*Mytilus edulis*) in the Schleswig-Holstein Wadden Sea
K:43	M.A. Collins *et al.*	Recruitment, maturation and spawning of the squid *Loligo forbesi* Steenstrup in the Irish and Celtic Seas
K:44	M.A. Collins *et al.*	Aspects of the diet of the squid *Loligo forbesi* Steenstrup in Irish waters
K:45 Ref. L	J.P. Baud *et al.*	Influence de la méthode de distribution du phytoplancton sur l'homogénéité de croissance de la palourde japonaise (*Ruditapes philippinarum*) élevée en bassin
K:46 Ref. D	I.F. Lawler and J.C. Aldrich	Multimodel analyses of growth in *Pecten maximus*
K:47 Ref. B,D,G, H,J,N	M. Andersen	Inshore survey for snowcrab, *Chionoecetes opilio*, in West Greenland
K:48 Sess. T	K.J. Collins *et al.*	Analysis of Poole Bay, U.K. lobster data
K:49	A.C. Jensen *et al.*	Lobster (*Homarus gammarus*) movement in the Poole Bay fishery, Dorset, U.K.
K:50	J. Martin	Période d'éclosion des larves d'araignée de mer *Maja squinado* Herbst en Manche et température de l'eau au printemps
K:51	R. Dinoso-Perez and A. Forest	Analyse des pêcheries françaises des céphalopodes dans le Golfe de Gascogne (Division VIII du CIEM)
K:52		Withdrawn
K:53 Ref. D	A. Temming *et al.*	Trends in the size of commercial catches of brown shrimp (*Crangon crangon* L.) along the German coast
K:54 Ref. B,D,G, H,J,N	T. Neudecker	Abundance indices of *Crangon crangon* L. at the west coast of Schleswig-Holstein (North Sea)
K:55		Withdrawn
K:56		Withdrawn
K:57		Withdrawn
K:58		Withdrawn

K:59		Withdrawn
K:60		Withdrawn
K:61		Withdrawn
K:62 Ref.D	R. Dijkema	Spatfall and recruitment of mussels (*Mytilus edulis* L.) and cockles (*Cerastoderma edule* L.) on different locations along the European coast
K:63 Sess. R **Poster**	R.C.A. Bannister	The United Kingdom approach to the enhancement of stocks of lobster (*Homarus gammarus* L.)
K:64 Ref. D	J.P. Hillis and O. Tully	Possible advances with the ageing of female *Nephrops* by separation of normal curves in length-frequency distributions
K:65	J.P. Hillis and O. Tully	Growth rate, mortality and small mean size in Irish Sea *Nephrops*
K:66		Report of the Study Group on Cephalopod Biology, Kiel, Germany, 21-22 September 1992

BIOLOGICAL OCEANOGRAPHY COMMITTEE

Chairman: Dr M. Reeve
Rapporteur: Dr P. Taylor

Business was conducted in three sessions on 23, 25, and 28 September. Theme Session S on the "Impact of Gelatinous Zooplankton Predators on Coastal and Shelf Ecosystems" was held on 24 September with an *ad hoc* discussion of the presentations held on 25 September.

Committee Business

The Chairman began the session by outlining for new members and participants the structure and operating procedures of ICES.

This was followed by a review of the reasons for the change of the Advisory Committee on Marine Pollution to the Advisory Committee on the Marine Environment. This change had emanated from ICES' need to consider the elevated importance of a broader range of environmental problems in the ICES region, particularly as they related to human impacts not limited to pollution.

Views on topics for special Theme Sessions at the 1994 Statutory Meeting were sought. Members were encouraged to put forward interdisciplinary topics that would receive the interest and support of other Committees.

Views were sought on styles of operation related to scientific presentations in the Committee and the ICES Statutory Meeting as a whole.

The Chairman reminded members of the competitions for awards to be given at the Statutory Meeting for Best Paper Presentation, Best Poster Presentation, and Young Scientist, and he encouraged members to suggest candidates from the Committee's sessions.

The Chairman noted two proposed Working Groups under the Committee, both representing a restructuring within ICES and involving the ecology of phytoplankton. Proposed was the establishment of a Working Group on Harmful Algal Bloom Dynamics under both the Biological Oceanography Committee and the Hydrography Committee. This would be combined with the elimination of the Study Group on the Dynamics of Algal Blooms which had recently been dealing primarily with harmful algal issues. This proposal recognized the need for continued interdisciplinary study of the topic and continued planning activities with other intergovernmental bodies (IOC and SCOR).

A Working Group on Phytoplankton Ecology was proposed, recognizing the importance of phytoplankton and primary production in ocean ecosystems and secondary production. Dr F. Colijn (Netherlands) had agreed to chair the new Working Group and had solicited advice from Committee members on involving scientists in the development of the new Working Group activities as outlined in the draft terms of reference.

A proposed Theme Session for the 1994 Statutory Meeting on the role of pelagic fish in marine ecosystems was discussed as an integrating theme of interest in the Biological Oceanography and Pelagic Fish Committees. The principle focus would be on the influence of zooplankton on growth of fish populations and the influence of large, pelagic fish stocks on the population dynamics of zooplankton. The adult and juvenile life history stages of the fish would be emphasized making this Theme Session a good complement of that proposed for 1995 on physics and early life history stages of demersal fishes (jointly by the Hydrography and Demersal Fish Committees).

The Inter-Committee Recruitment Group, comprising the Chairmen of the Biological Oceanography, Hydrography, Marine Environmental Quality, Demersal Fish, Pelagic Fish, and Shellfish Committees, had been created to help facilitate integrated and interdisciplinary discussions and research on recruitment processes in ICES. With the ongoing activities of the Working Group on Cod and Climate Change and a number of Study Groups (e.g., Study Group on Zooplankton Production, Study Group on Methods of Spatial and Temporal Integration), the Inter-Committee Recruitment Group had met and recommended dissolution.

The author of Doc. L:68 was nominated as a candidate for the Best Paper Presentation Award and the author of Doc. L:52 for the Young Scientist Award.

The Chairman asked for suggestions and feelings about the future structure of ICES and the Statutory Meeting. There was a general sense that the scientific presentations within Committees and the business aspects of each Committee should be organized in separate sessions. This should allow better scheduling of the sessions for those participants interested in only one type of activity. The business sessions should continue to be open to all participants, however, both for allowing newcomers to learn the operations of the organization and because the Committees must continue to engage the science community in order to accomplish their business through Working and Study Groups.

There was a suggestion to have most presentations which were not assigned to Theme Sessions to be given in pos-

ter sessions. These should be scheduled so as not to overlap with other meeting activities, and would also allow more interaction with the author on the nature of the research presented. It would improve the problems due to overlapping Committees and loosely scheduled agendas that often prevented participants from hearing a given oral presentation in Committee meetings. Some felt the value to young scientists of giving oral presentations in the Committee meetings weighed heavily in favour of keeping that format.

There was clear support for keeping the ICES Statutory Meeting as open a forum as possible for scientific discussions and presentations if format changes were to be made.

Working and Study Group Reports

Working Group on Recruitment Processes (Doc. L:5)

A very brief report was given as the Working Group had proposed, in Fuengirola, Spain in 1992, to work by correspondence in 1993. The next meeting of the Group was scheduled in June 1994 in Sweden as recommended in 1992. This meeting would occur either before or after the proposed meeting of the Working Group on Cod and Climate Change on intermediate scale processes, taking advantage of the scientists in both meetings.

Several members of the Working Group on Recruitment Processes had participated in the meeting of the Study Group on Methods of Spatial and Temporal Integration (Doc. L:9). The conclusions of this Study Group would be used to discuss new approaches for assimilating field data into ecosystem models.

Benthos Ecology Working Group (Doc. L:3)

The Working Group had met from 3-8 May 1993 in Kiel and presented a comprehensive report to the Committee which outlined progress in three main areas: the status of data bases on benthic marine ecology in the ICES areas, benthos indicator species, and the role of global climate change in benthos ecology.

A main activity of the Working Group in recent years, the North Sea Task Force Survey, was completed, although samples were not fully processed due to funding limitations. This made it impossible, at present, for the Group to complete the assigned task of analysis. Many data bases on benthos ecology existed for the ICES area. The Working Group suggested that the development of a specific ICES data base be considered by ICES. The overall problem of funding the activity would have to be addressed, but Belgium had voiced a willingness to organize the effort. The Working Group recommended a further review of the availability, quality, and accessibility of data bases for the ICES region as a major activity for the coming year.

The use of historical and contemporary data bases to look at global climate change effects had been initiated by Norway. The Working Group was considering the revisiting of the North Sea Benthos Survey sites after ten years (1996) and the use of the sites for long-term studies on the benthos.

The Working Group reported on the critical need for good taxonomic expertise and identification capabilities in benthos ecology, and in particular for meeting the charges to the Working Group, e.g., assessing global climate change, indicator species, and development of useful identification sheets. This was a world-wide problem.

The Committee endorsed the planned activities of the Working Group. The Group proposed meeting in May 1994 in Yerseke, Netherlands.

Study Group on Gulf III Sampler Efficiency (Doc. L:8)

The Study Group had met 3 February 1993 in Aberdeen. The Study Group Chairman, Prof. D. Schnack reported on efforts to look at standardization of flowmeter calibration for the Gulf III. This was critical for good and comparable estimation of biomass. Three varieties of the sampler would be inter-compared in Hamburg in 1994. The Study Group pointed to the need for new technology for measuring flow in these samplers and the probable key role of electromagnetic systems. This type of flowmeter obviated the need for moving parts and would likely simplify calibration, but further testing was needed. The frontal visibility of the Gulf III and avoidance behaviour of animals was discussed. The Study Group recommended the designing of a next-generation sampler that would incorporate new flow measuring systems, advances in camouflaging, and the absence of a nose cone. The Study Group proposed seeking EC funding for this initiative.

The Committee agreed to these recommendations and that the Study Group should continue to work by correspondence in 1994.

Working Group on Cod and Climate Change (Doc. G:3)

This was a joint Working Group of ICES and International GLOBEC - Global Ocean Ecosystems Dynamics. The Working Group reported to the Consultative Committee because the Biological Oceanography Committee and several other Committees were very interested in its work. It was very interactive with the Biological Oceanography and the Hydrography Committees. The Working Group had met in Lowestoft from 7-11 June 1993.

A brief report was presented by the Working Group Chairman, Dr K. Brander on activities in coupling physical oceanography, zooplankton and fish populations, and time series. Theme Workshops were planned for 1994 that would focus on 1) retrospective analyses of cod stocks and climate variables, 2) time-series analysis and data bases, and 3) aggregation in physical/biological processes. The Working Group recommended that ICES support the continuation of the Continuous Plankton Recorder (CPR) programme and its use with a coordinated ichthyoplankton survey in 1996 of the North Sea. Better use of data on spatial and temporal distribution of cod reproduction was essential to address research in the Cod and Climate Change programme.

The Working Group identified the need to assemble the existing information that could be used to assess climate effects on cod populations. A Workshop proposed for October 1994 would focus on information for cod populations of West Greenland and Labrador from the 19th century and inter-stock exchange in the American region.

A Workshop was proposed to look at the available data bases in which integrated information on cod, zooplankton, and physical oceanography could be used to study the processes controlling relationships. Efforts would be devoted to critical methods for the analysis of time-series data and a discussion about the establishment of centralized, regional data bases.

The Working Group suggested that the important understanding of how physical processes affected the distribution and aggregation of prey for cod was hampered by the limited knowledge of how sub-mesoscale processes affected cod ecology. A number of areas had been identified and proposed for discussion at a Workshop in June 1994 in Charlottenlund to be organized by Dr B. Mackenzie and Dr M. St. John. These generally related to how physical processes enhanced nutrient dynamics, primary production, secondary production, larval and juvenile feeding, and the distribution of both prey and cod early life history stages.

Study Group on Methods of Spatial and Temporal Integration (Doc. L:9)

The Study Group had met from 14-18 June 1993 in Glasgow. A member of the Group presented the report. The primary attention of the Study Group was on temporal and spatial integration in trophic interactions. Integrated data on larval fishes, their predators, and prey were very sparse, necessitating the formulation of mechanistic models on trophic interactions that could be used to test (invalidate) against data. The Study Group suggested that the integration of scales would be best achieved by formulating very specific models for chosen scales of interest. These should then be developed such that the central focus, e.g., a given trophic level, would be well specified in the model and that other levels (predators, prey) would be much less specified.

The Study Group had forwarded its conclusions to the Working Group on Recruitment Processes. No meeting was proposed for 1994. The Committee expressed pleasure at the activities of the Study Group and the concise nature of it recommendations. It was assumed that the Working Group on Recruitment Processes would discuss the report at its 1994 meeting and make further recommendations for activities of the Study Group, which, in the meantime, would only correspond in 1994.

Draft Report of the Study Group on Seabird/Fish Interactions (Doc. L:10)

The Study Group had met from 6-10 September 1993 in Copenhagen. Dr M. Tasker, a Study Group member, presented the report. The Study Group had looked at seabird/fish interactions globally, but concentrated on activities in the North Sea. They noted that the modelling of seabird energetics and feeding required components of bird densities, energy budgets, diets, and the energy available in prey. These models were highly dependent on the nature of the diet, a topic about which far too little information existed. The Study Group encouraged more research on seabird diet.

The Study Group proposed meeting in September 1994 in Aberdeen. The primary topics for discussion would include 1) regional views of the overlap and balance of seaduck vs fisheries take of shellfish, 2) the regional breeding success of seabirds as related to the regional oceanographic variability, and 3) the response of seabird populations to discards in fisheries.

Study Group on Zooplankton Production (Doc. L:11)

The Study Group had met from 8-11 March 1993 in Las Palmas, Canary Islands, Spain. The primary task for the Study Group was a review of methodologies used in studying zooplankton abundance estimation, secondary production, and other processes that were closely aligned with understanding the population dynamics of zooplankton and their role in the flux of materials in the sea. Particular discussion was being directed at candidate methods for both improvement and standardization that would facilitate comparative research in ICES and GLOBEC programmes.

A field test in a Norwegian fjord of methods for estimating biomass (Doc. L:45) provided an opportunity to test popular single- and multiple-net sampling equipment along with newer acoustical and optical instruments.

Comparison of lab-based methods for estimating secondary production in zooplankton (growth and reproductive rate measurements) was planned for two small Work-

shops (October 1993 for *Acartia*, April 1994 for *Calanus*). A methods manual would result from these Workshops and was intended for publication in 1995.

The Chairman of the Study Group reported on a proposed Workshop on trans-latitudinal studies of *Calanus finmarchicus* in the North Atlantic to be organized by Dr K. Tande and Dr C. Miller. This was proposed to be held in Bergen, in association with the next meeting of the Study Group in March 1994 so that interested scientists could easily attend both. This effort was very important in the context of GLOBEC and Working Group on Cod and Climate Change regional North Atlantic studies of interrelationships between zooplankton, ocean physics, climate, and cod populations.

The ICES Zooplankton Production Symposium, August 1994, was discussed. The major themes of the Symposium, one to be highlighted each day, were: 1) biomass and production methods, 2) regional interactions of physics and population variability, 3) food webs, and 4) spatial/temporal variability. The final day would feature a synthesis and discussion of research to be proposed in GLOBEC and the Cod and Climate Change programme.

Study Group on the Dynamics of Algal Blooms (Doc. L:7)

The Study Group had met from 8-11 February 1993 as a joint ICES/IOC Study Group along with the ICES Working Group on Shelf Seas Oceanography. The increasing occurrence of noxious and harmful algal population blooms and the heightened awareness of the need for a better understanding of the blooms had resulted in a very active collaboration between IOC, the Study Group, and the Working Group. A strong coordination of activities was suggested, particularly regarding three regions chosen for study: the Iberian peninsula, the Skagerrak/Kattegat region, and the Gulf of Maine.

The Group had identified three topics of general importance for harmful bloom research: 1) the use of population dynamics approaches for looking at blooms, 2) the role and importance of cyst forming species and cyst formation in blooms, with particular attention to regional comparisons, and 3) the potential use of mesocosms in the study of algal bloom ecology and the physiology of toxins formers.

The Committee applauded the very active role of this Study Group in developing the international science of harmful and noxious algal blooms along with the Hydrography Committee's Working Group on Shelf Seas Oceanography. The Committee identified the interdisciplinary nature of research on this topic and the need for continued planning for methods developments, regional comparisons, and joint research projects. The Committee recognized the need for a Working Group to continue these activities and strongly recommended the re-establishment of the Study Group as the Working Group on Harmful Algal Bloom Dynamics under both the Biological Oceanography and Hydrography Committees.

Study Group on FISHBASE (Doc. L:6)

A general update of the concept of the FISHBASE data base and systems was presented. This activity was operated by ICLARM and supported by FAO and the EC. The data base was developed to provide easy access by developing countries to information that was useful in the management of fisheries resources, but the system was also being used in European countries. Currently, the fisheries-relevant information (e.g., growth parameters, information on mortality, diets) was being augmented with a variety of other data such as genetics, larval dynamics, taxonomy, and systematics.

The system was intended to be available in CD-ROM form within one year; access to summary descriptive data and specific data base information was currently available by contacting the ICLARM office.

FISHBASE was producing summary papers on a species by species basis. A summary paper for northern cod was currently being prepared for completion this year.

The Study Group had recommended that it be extended for one year to work by correspondence and complete summary papers on several species important to ICES. The Group would also seek to link the ICES activities on rare species to FISHBASE.

Scientific Contributions

Phytoplankton

Five presentations were made that principally dealt with phytoplankton ecology. Doc. L:54 presented some interesting preliminary analyses of the relationship between the nutrient chemistry, mesoscale circulation around the Faroe Bank, and the abundance and production of phytoplankton.

The dynamics of noxious and nuisance phytoplankton in Irish waters were discussed in Docs. L:30 and L:31. The early 1990s had seen a significant increase in the spatial occurrence of *Dinophysis* and the temporal extent of the period in which high densities were found in coastal waters (Doc. L:30). The lack of a clear relationship between cell densities and the occurrence of toxins in shellfish as deduced from standard assays was perplexing. The influences on toxin occurrences was clearly an important topic for research in harmful algal ecology and physiology. Some six other species of noxious and nuisance algae were reported in Doc. L:31. Not all were showing increasing frequency of occurrence, but both

Gymnodinium and *Phaeocystis* were significant problems in the salmon industries.

The authors of Docs. L:19 and L:25 presented research on the dynamics of estuarine phytoplankton assemblages in a Galway Bay estuary. The assemblage was made up of freshwater, marine, and resident estuarine forms with dinoflagellates, diatoms, and flagellates all being important in the system. The relative abundance of these groups seemed to follow a repeatable successional pattern. Likewise, a succession within each group was also observed. Spatial differences in the inner and outer estuarine regions over a seasonal cycle were compared (Doc. L:19) with temperature and salinity dynamics and the fluctuations in populations of both meso- and micro-zooplankton. It appeared that the microzooplankton were the controlling element for the phytoplankton as nutrients were abundant and the mesozooplankton seemed to be controlled by gelatinous forms.

Zooplankton

Most of the zooplankton research was presented in Theme Session S on "Impact of Gelatinous Zooplankton Predators on Coastal and Shelf Ecosystems" (Docs. L:20, L:21, L:36, L:42, L:55, L:60, L:61, L:68, L:69, L:74) which highlighted the important influence of invertebrate predators in numerous systems. Participants recommended that invertebrate predators be specifically included as integral parts of all zooplankton investigations and monitoring supported by ICES, and in ICES publications. It was felt that sampling methods pertinent to invertebrate predators, in particular the gelatinous forms, needed to be much more developed and employed in ICES investigations. Participants suggested that ICES should consider establishing a Study Group to focus on the role of invertebrate predators in ocean ecosystems.

The continuation of the Continuous Plankton Recorder surveys and the re-establishment of many of the lines in the North Atlantic (Doc. L:16), as made possible by new sources of funding and the establishment of the Sir Alistair Hardy Foundation, was presented. The prototype coupling of CTD and fluorometry sensors to the CPR would provide an important environmental context to the surveys and make the results more useful for GLOBEC and CCC programmes. Discussions on the next generation of the CPR were ongoing along with efforts to understand CPR sampling relative to tow speed, animal behaviour, and system biases.

Three contributions on the spatial and temporal distribution of crustacean zooplankton were presented. Doc. L:15 implicated temperature as the main factor related to the interannual variations in the abundance of zooplankton in the Gulf of Riga. Doc. L:44 linked the dynamics of vertical position of krill, mesopelagic fish, shrimp, and gelatinous zooplankton populations in Norwegian shelf and slope waters to physical oceanographic processes. Gyres formed over the banks were important in the spatial distribution of these animals.

Off the north coast of Iberia (Doc. L:51), the vertical distribution of zooplankton related well to the abundance of chlorophyll and also tracked very closely with the distribution of larval sardines. Doc. L:13 presented experimental evaluation of the role of microzooplankton in the diets of oceanic copepods as compared with phytoplankton. While of substantial importance in dominant North Pacific and North Atlantic copepods, microzooplankton were seen to comprise 80% of the diet of *Neocalanus plumchrus* in the former, at least four-fold greater than that seen in the North Atlantic *Calanus finmarchicus*.

Benthos

Only one presentation was made pertaining to benthos ecology. Doc. L:39 examined the historical decline of the *Furcellaria* populations in the Gulf of Riga and the use of artificial reef structures to improve the abundance and harvest of the species. *Furcellaria* was used in agar production and was considered to be a prime habitat for the deposition of herring eggs in that region.

Fish

Four presentations were made on fish ecology and biology. Doc. L:23 compared *in situ* rates of food consumption in juvenile herring to predicted rates in a model of feeding. The author showed the diel patterns of feeding in the Northern Baltic and the weight-specific decrease in consumption by juveniles with increasing size. The results predicted that juvenile herring were capable of consuming 100% of the zooplankton production in that region during late summer. Doc. L:22 reported on the factors influencing the distribution of Patagonian sprat.

The validation of otolith daily growth patterns using an advanced image analysis systems was reported in Doc. L:52. The analysis system proved very useful for the semi-automatic counting of daily growth increments. The hatching dates and somatic growth estimations were reported for the European smelt.

The authors of Doc. L:43 used hydroacoustic and optical technology to analyze the response of mesopelagic fishes and krill to environmental features. The fish appeared to respond to light levels that were dictated by the density of algal populations, being situated higher in the water column as algal density increased. Krill populations appeared to shift vertically as a reaction to the prevalence and position of mesopelagic fishes above and demersal fishes below. A behavioral response to the fish predators was suggested, but the pattern could have resulted from predation directly, with the observed krill representing the survivors.

DOCUMENTS

L:1		Report of Activities, 1992
L:2		Withdrawn
L:3		Report of the Benthos Ecology Working Group, Kiel, Germany, 3-8 May 1993
L:4 Ref. A,C,E, G,H,K		Report of the Inter-Committee Recruitment Group, Dublin, Ireland
L:5		Report of the Working Group on Recruitment Processes
L:6		1993 Report of the Study Group on FISHBASE
L:7 Ref. C		Report of the ICES/IOC Study Group on the Dynamics of Algal Blooms (SGDAB) and the Joint Meeting of SGDAB and the ICES Working Group on Shelf Seas Oceanography (SSOWG), Charleston, USA, 8-11 February 1993
L:8		Report of the Study Group on GULF III Sampler Efficiency Calibrations, Aberdeen, Scotland, 3 February 1993
L:9		Report of the Study Group on Methods of Spatial and Temporal Integration, Glasgow, Scotland, 14-18 June 1993
L:10		Draft Report of the Study Group on Seabird/Fish Interactions, Copenhagen, 6-10 September 1993 (text only)
L:11		Report from the 2nd Meeting of the Study Group on Zooplankton Production, Las Palmas, Canary Islands, Spain, 8-11 March 1993
L:12 Ref. Pub	J.A. Lindley	*Identification Leaflets for Plankton*, Editor's report 1992/93
L:13	D.J. Gifford	Planktonic Protozoa in copepod diet: examples from the North Atlantic and the North Pacific
L:14 Sess. O **Poster**	L.V. Shannon and K.L. Cochrane	The Benguela ecology programme - an example of a successful interdisciplinary study of upwelling and its biological consequences
L:15	L. Sidrevics *et al.*	Long-term changes of zooplankton abundance in the Gulf of Riga
L:16	J.C. Gamble *et al.*	The status of plankton populations in the northeast European shelf seas and the northwest Atlantic as determined by the Continuous Plankton Recorder Survey
L:17 Sess. O	R. Raine *et al.*	Upwelling around the southwest Irish coast: near-surface dynamics and blooms of dinolflagellate *Gyrodinium cf. aureolum* (Hulbert)
L:18 Sess. O	R. Raine *et al.*	Upwelling and the phytoplankton ecology of southwest Irish coastal waters
L:19	P. Byrne and J. O'Mahony	Observed sequential occurrence of phytoplankton and zooplankton in the Dunkellin estuary, Galway Bay, Ireland

L:20 Sess. S	G. Schneider	Does *Aurelia aurita* really decimate zooplankton in Kiel Bight?
L:21 Sess. S	J.H. Steele	The role of invertebrate predators
L:22 Ref. H	R.P. Sánchez *et al.*	Distribution and abundance of post-larvae and juveniles of the Patagonian sprat, *Sprattus fuegensis*, and related hydrographic conditions
L:23 Ref. J	F. Arrhenius and S. Hansson	*In situ* food consumption by young Baltic Sea herring (*Clupea harengus*) - a test of a bioenergetic model
L:24	J.M. Rodríguez and F. Lozano-Saldevilla	Cruise "Canarias 9206". Preliminary results on composition, abundance and horizontal distribution of ichthyoplankton
L:25	J.H.T. O'Mahony	Seasonal cycle of phytoplankton in the Dunkellin estuary, western Ireland + addendum of page 9
L:26		Withdrawn
L:27 Ref. J	S. Semyonova *et al.*	Spatial structure of phytocene in the Baltic Sea in May 1992
L:28 Ref. J	O. Krylova *et al.*	Production of hydrobionts and structure of food grid within the ecosystem of the Vistula Bay in the Baltic Sea
L:29		Withdrawn
L:30 Ref. F	D. Jackson and J. Silke	*Dinophysis* species in Irish waters 1990-1993
L:31 Ref. F	J. Silke and D. Jackson	Harmful and nuisance algal blooms in Irish coastal waters 1990-1993
L:32 Sess. O	G. Moincoiffé *et al.*	Variability of surface planktonic community metabolism in response to coastal upwelling events in the Ria de Vigo (NW Spain)
L:33 Sess. O	H.-Ch. John and P. Ré	Cross-shelf zonation, vertical distribution, and drift of fish larvae off Northern Portugal during weak upwelling
L:34		Withdrawn
L:35		Withdrawn
L:36 Sess. S	P. Kremer	Ctenophore population dynamics: patterns of abundance for *Mnemiopsis* in US coastal waters
L:37		Withdrawn
L:38 Sess. O	S. Fraga	Harmful algal blooms in relation to wind induced coastal upwelling and river plumes
L:39	A. Korolev *et al.*	Investigations of the *Furcellaria lumbricalis* distribution and abundance at the eastern coast of the Baltic Sea
L:40		Withdrawn
L:41		Withdrawn

L:42 Sess. S	J.E. Purcell *et al.*	*In situ* predation rates on Bay anchovy (*Anchoa mitchilli*) eggs and larvae by Scyphomedusae (*Chrysaora guinquecirrha*) ctenophores (*Mnemiopsis leidyi*) in Chesapeake Bay, USA
L:43	S. Kaartvedt *et al.*	Underwater optics and behavioural responses of krill to presence of fish predators' effect fish-plankton interactions
L:44	W. Melle *et al.*	Acoustic visualization of large scale macroplankton and micronekton distribution across the Norwegian Shelf and slope of the Norwegian Sea
L:45	H.R. Skjoldal *et al.*	Preliminary report from the sea-going workshop in Norway June 1993 on intercomparison and evaluation of methods for sampling and determination of zooplankton distribution and biomass (ICES Study Group on Zooplankton Production)
L:46		Withdrawn
L:47 Ref. H	P. Dalpadado	Some observations on the feeding ecology of Norwegian spring spawning herring *Clupea harengus* along the coast of Norway
L:48		Withdrawn
L:49		Withdrawn
L:50		Withdrawn
L:51	F. Puelles *et al.*	Diel variations in vertical distribution of copepods in the north Iberian coast
L:52 Ref. M	A. Sepulveda	Daily growth increments in the otoliths of European smelt, *Osmerus eperlanus* L., larvae
L:53 Sess. O	A. Bode *et al.*	Variability of phytoplankton biomass and primary productivity in the shelf waters of the upwelling area of N-NW Spain
L:54	E. Gaard and H. Mortensen	Phyto- and zooplankton communities on the Faroe Bank and their relations to the physical and chemical environment
L:55 Sess. S	E.D. Houde *et al.*	Mesocosms adrift: a method to estimate fish egg and larvae mortality rates
L:56	Cl. Zelck	Horizontal and vertical distribution of *Cyclothone* and *Vinciguerria* larvae at a watermass front in the NE Atlantic
L:57	A. Sieg	Histological study on larval nutritional condition of the Southwest Atlantic anchovy, *Engraulis anchoita* (Hubbs and Marini 1935), caught in three hydrographically differing frontal systems of the Southwest Atlantic
L:58		Withdrawn
L:59 Ref. G+K	A.G.C. del Norte-Campos and A. Temming	Diurnal activity and feeding in gobies and brown shrimp in the northern Wadden Sea
L:60 Sess. S	W. Greve	Gelatinous zooplankton systems ecology in the German Bight

L:61 Sess. S	W. Greve	German Bight ecosystem responses to the invasion of a Siphonophore
L:62 Sess. O	M.E. Cunha	Seasonal variation of the zooplankton biomass over the Portuguese continental shelf
L:63 Sess. O	M.E. Cunha	Spatial variation of the zooplankton biomass in relation to the hydrographic conditions off the Portuguese coast
L:64 Sess. O	M.T. Moita	Spatial variability of phytoplankton communities in the upwelling region off Portugal
L:65		Withdrawn
L:66 Sess. O	A.J. da Silva and M.T. Moita	Dynamic of toxic dinoflagellates during an upwelling event at the northwest coast off Portugal
L:67 Sess. T **Poster**	Z. Klusek and M. Ostrowski	Software package for environmental monitoring of birds and fish/plankton relationship in the Arctic
L:68 Sess. S	T.J. Smayda	Experimental manipulations of phytoplankton + zooplankton + ctenophore communities, and foodweb roles of the ctenophore, *Mnemiopsis leidyi*
L:69 Sess. S	S.P. Volovik *et al.*	*Mnemiopsis leidyi* in the Azov Sea: biology, population dynamics, impact to the ecosystem and fisheries
L:70 Ref. K	A. Razinkovas	Functioning of nectobenthic complexes as a result of opossum shrimp acclimatization in the Curonian Lagoon
L:71		Withdrawn
L:72	N.V. Mukhina	Trends of variations in abundance of the main commercial fish of the Barents Sea in early ontogeny
L:73 Sess. O	L. Postel *et al.*	Rostock zooplankton studies off West Africa
L:74 Sess. S	G.R. Harbison	The potential of fishes for the control of gelatinous zooplankton
L:75 Sess. T	T. Noji	Image analysis at the Institute of Marine Research, Norway
L:76 Sess. O	Cl. Roy	The optimal environmental window hypothesis: a non-linear environmental process affecting recruitment success

ANADROMOUS AND CATADROMOUS FISH COMMITTEE

Chairman: Mr Á. Isaksson
Rapporteur: Mr D.A. Dunkley

Administrative Matters

The Committee met in three short sessions on 24, 27, and 28 September and one longer session on 25 September. On 25 September, the Committee also met in a Joint Pelagic/ANACAT/Hydrography Committee Session which had as its theme "Effects of Oceanographic Factors on the Survival and Distribution of Fish".

During the first session of the Committee, the Rapporteur was appointed and the agenda adopted.

The Chairman reported that Docs. M:8, M:20, M:23, M:27, M:36, M:37, M:38, M:45, M:46, M:49, and M:50 had been withdrawn and that Docs. M:9, M:10, M:13, M:42, and M:59 would be presented at the Joint Pelagic/ANACAT/Hydrography Committee Session. The Chairman reported that many papers had been very late in arriving, and he requested that papers should arrive at least 24 hours prior to their scheduled presentation.

The Chairman announced that there would be an excursion to the River Shannon on Wednesday 29 September.

The Chairman drew members' attention to the serious discussions being held on the future role of ICES. This topic would have special coverage in Theme Session U on "Improving ICES Science and Communication" to be held on Tuesday 28 September. Attention was drawn to Doc. Gen:4, "Report of Mid-Term Meeting of Consultative Committee", and Doc. Gen:6, "Report of the Bureau Working Group on Strategic Planning for Scientific Cooperation and Advice".

The Chairman presented the "Report of Activities, 1992" (Doc. M:1) and noted that this report was now very long and, although there were new members, efforts should be made to shorten it. The Chairman presented the list of "Publications of Interest to the Anadromous and Catadromous Committee, 1992" (Doc. M:2). This was a very useful document and members were encouraged to submit references for inclusion when they submitted their reports of activities. The Chairman also presented the "ICES compilation of microtag, finclip and external tag releases in 1992" (Doc. M:4).

A report on the Tenth Annual Meeting of NASCO was given by Dr P. Hutchinson. The Council of NASCO had unanimously adopted a minimum standard for catch statistics in order to improve the comparability of the statistics provided by the Contracting Parties. During the year, NASCO had received further reports of fishing for salmon in international waters by vessels registered to non-member countries. Further diplomatic approaches had been made to the countries concerned in an effort to ensure their adherence to the Protocol which had been agreed in 1992. In addition, NASCO had organized a meeting of coast guard authorities, and a number of recommendations had been made concerning ways to improve the surveillance of the area of international waters and to increase public awareness of the problem. During the year, work had commenced on establishing a data base of all salmon rivers in the Convention area. Data on approximately 1000 rivers had been incorporated, and it was reported that approximately 16% of these rivers were considered to be threatened with loss due to a number of factors including deterioration of water quality, diseases and parasites, and the occurrence of fish farm escapees.

NASCO had also reviewed the impacts of aquaculture and introductions and transfers and had decided to establish Working Groups to further examine these issues. In the Commissions, regulatory measures had been agreed for both the Faroes and West Greenland fisheries. The latter measure incorporated a mechanism for establishing quotas for the years 1993-1997 based on the pre-fishery abundance of 2SW salmon of North American origin and the spawning target escapement. In 1993, the quota would be set at 213 t which was expected to achieve 72% of the target escapement, and in 1994 the Parties would seek to achieve 85% of this target.

Dr M. Windsor gave a report on the ICES/NASCO/IBSFC Dialogue Meeting which had been held as a Special Session of the Council during its Tenth Annual Meeting. This was the first time that a Dialogue Meeting had been devoted to a single species, the Atlantic salmon. The Meeting included fourteen presentations dealing with both the North Atlantic and Baltic stocks, and an extended period of discussion. There was a frank exchange of views among managers, scientists, and users of the resource and a considerable number of points emerged concerning principles, threats, representation, and research. It was agreed that the Meeting had been valuable to the three sponsoring organizations. The report of the meeting would be published in the *ICES Cooperative Research Report* series.

Mr E. Ikonen presented a report of the meeting of the International Baltic Sea Fishery Commission (IBSFC) held in Warsaw from 13-18 September 1993. IBSFC had requested ICES to "assess the status of Baltic salmon stocks and provide catch options within safe biological

limits defined to safeguard wild Baltic salmon stocks". For the Baltic Main Basin and the Gulf of Bothnia, ICES had recommended a catch limit of 500,000 salmon, a closure of fisheries in Sub-division 30 from 1 May - 15 September, and closed areas outside rivers with naturally reproducing salmon populations. ICES also noted that the disease M-74 posed a serious threat to wild salmon stocks. IBSFC set a TAC of 600,000 salmon based on the needs of the fishing industry, but there was no agreement on allocation between contracting parties. There was no agreement on fishery closures, although some national regulatory measures would be introduced. For the Gulf of Finland (Sub-division 32), ICES noted that if fishing continued at current levels, there would be no improvement in the status of the wild stocks. ICES estimated that a catch of 65,000 fish could be expected in 1994. IBSFC set a TAC of 120,000 fish based on perceived national requirements, and agreement was reached on allocations to contracting parties.

Working/Study Group Reports

The report of the Working Group on North Atlantic Salmon (Doc. Assess:10) and the reports of the Study Groups on North American Salmon Fisheries (Doc. Assess:9) and North-East Atlantic Salmon Fisheries (Doc. Assess:13) were presented by the Working Group Chairman, Dr K. Friedland. During its meeting, the Working Group had considered reports prepared by the two Study Groups. Data presented in Doc. M:19 were included in the analyses to determine the origin of stocks present in the West Greenland fishery.

The total catch of Atlantic salmon reported for all fisheries (3,996 t) and for homewater fisheries (3,720 t) continued the declining trend observed in recent years. Catches in many countries were among the lowest on record. The Working Group analyzed both fisheries-dependent and independent sources of information and concluded that the decline in catch could not be due to changes in management alone, and that the data suggested reduced abundance of wild salmon populations.

The total nominal catch in the Faroes fishery in the 1991/92 season was 31 t which was solely from the research fishery at Faroes. The fishery was marked by the highest catch-per-unit-effort for the season ever recorded. Recent observations indicated that escaped reared fish were numerous in the Faroes area.

The total nominal catch at West Greenland was 237 t in 1992. The landings during the first two weeks of the fishery were among the lowest historical values observed. The results of classifying salmon to continent of origin in 1992 indicated that the North American proportion was 54%, and the European proportion was 46%.

The Working Group continued its work on continental run reconstruction and catch advice models. The pre-fishery abundance of North American stock was predicted by a stochastic, regression model based on winter sea-surface temperature. Catch quota options were presented in a risk assessment framework.

The major recommendations of the Working Group were as follows:

a) The Working Group recommended that broad-based studies should be in place on stock identification methodologies, stock-recruitment relationships, forecast models, stock complex models, survival, and growth of stock complexes.

b) The Working Group recommended a new focus on investigations relevant to methodologies, causal mechanisms of stock dynamics, and man-induced threats to wild salmon stocks such as target and critical spawning levels for Atlantic salmon stocks; biological and environmental variables which provide interpretation of trends of salmon abundance; impact of the recent changes in the abundance of wild, farm, and ranched salmon, and their impacts on wild stocks; mechanism governing maturation.

c) The Working Group recommended that a Study Group on Genetic Risks to Atlantic Salmon convene in 1994 to update progress on methodology and assess recent laboratory and behavioral research findings and that a Workshop be convened to consider available stock and recruitment data as well as methodology to develop target egg and spawner requirements.

The report of the Study Group on Stock Identification Protocols for Finfish and Shellfish Stocks (Doc. M:3) was presented by the Study Group Chairman, Dr K. Friedland. The terms of reference for the Study Group had been to review recent advances in stock identification methodology and the development of a protocol of stock identification methodology for use by the ICES scientific community.

The Study Group had discussed a range of topics at its inaugural meeting. Discussion areas included recent developments in genetic stock identification techniques, mathematical classification models, multi-disciplinary stock identification approaches, and an agreed approach for developing the stock identification protocol. The Study Group would welcome contributions for the protocol from the widest possible participation.

The Study Group recommended that its next meeting deal with issues of herring stock identification and the interpretation of genetic stock identification data. In addition,

work on the stock identification protocol should continue with contributions both by Study Group members and by correspondence.

The report of the Baltic Salmon and Trout Assessment Working Group (Doc. Assess:14) was presented by Dr L. Karlsson. The mean catch of Baltic salmon for the period 1990-1992 (4,896 t) was the highest since the time series of data began in 1915. There had been a slight decrease in the proportion of the catch taken in the offshore fishery in recent years. Fishing effort in the offshore fishery had decreased in recent years, especially since 1989, partly due to the imposition of a TAC in 1991-1993. The total catch of sea trout in the Baltic in 1992 was 1,364 t, the second highest (1,522 t in 1990) in the time series starting in 1979.

The total estimated production of wild salmon smolts in Baltic rivers in 1992 was 487,000. The production of wild smolts in the Gulf of Bothnia was 257,000, estimated to be about 20% of the potential production level. At least 250 rivers had sea trout runs based on natural reproduction, but there were no estimates of sea trout smolt production. Many populations were regarded as being in danger and some were near extinction.

The Working Group had examined the scale reading method currently in use in the Baltic countries to distinguish between wild and reared salmon. The method had proved to be unreliable in salmon caught in the Main Basin. Investigations into the applicability of the method would continue.

A number of assessment models had been investigated in previous years, including forward-running models and VPA. In 1993, the Working Group had concentrated on assembling a run-reconstruction model, which had not been successful.

The problem of the effects of the disease M-74 had been addressed. This disease first appeared in Swedish hatcheries in 1974 and affected the ova from some female salmon which had returned from the Baltic sea. By 1992, average mortalities of 60-70% between stripping and feeding fry had been recorded in some stocks, but the level had risen to 70-90% in 1993. The disease had also been identified in females of wild origin. There appeared to be a link between abnormal swimming behaviour in female salmon and the occurrence of M-74 in their offspring.

Scientific Contributions

Sea Trout Session

The Chairman dedicated the first session to the memory of the late Dr David Piggins who, at last year's meeting, had encouraged the establishment of a Study Group on sea trout within ANACAT

Studies in southern Iceland (Doc. M:11) had revealed that densities of sea trout (*Salmo trutta* L.) fry were usually high, but variable between years. Fish emigrated as smolts at age 3-4 years and at a size of 20-30 cm. Summer months were spent at sea, but the fish overwintered in freshwater. Maturity was reached after 3-4 summers in the sea. Tagging results indicated that these fish invariably spawned in their home rivers.

Doc. M:16 discussed the present situation of sea trout in the River Vistula, Poland. Pollution had severely reduced the population of sea trout in this river. Details were given of restocking programmes in 1972-1992 using alevins and smolts. During this period, catches had ranged between 30.9 and 129.1 t. Return rates of sea trout had amounted to 295.5 kg per 1,000 smolts.

An extensive and very useful review of the status of sea trout in Denmark was provided in Doc. M:22. At the start of this century, 249 Danish rivers had sea trout populations; by 1976, the number had dropped to 176, but recent improvements in pollution control, habitat restoration, and the provision of effective fish passes had resulted in an increase to 244 rivers. This paper provided a very comprehensive bibliography of Danish sea trout research work.

Marking and tagging experiments carried out in Iceland in 1947-1958 were described (Doc. M:12). A total of 1,567 sea trout were marked by fin-clipping and 253 were tagged, mostly in 1956-1958. Reporting of fin-clipped sea trout was poor in most years, giving a total recapture rate of 3.7% for the whole period. The average recapture rate of tagged sea trout was 10.2%.

The results of tagging experiments involving 400 groups of Finnish sea trout were presented in Doc. M:33. High recapture rates and growth rates were demonstrated in recaptures taken in the Archipelago sea and Gulf of Finland compared with those recaptured in the Bothnian Bay. It was found that better results were obtained from spring releases than from autumn releases.

Doc. M:44 provided a detailed description of the biology of the sea trout population of the Burrishoole system in Ireland before and during a population collapse. During the 1990s, smolt production had decreased by about half. In the same period, mean smolt age and length had increased.

Doc. M:47 gave details of a kelt reconditioning programme instituted in response to a reduction in sea trout stocks in mid-west Ireland. Kelt reconditioning and fertilization of stripped ova had been good, but some fry had

exhibited heavy mortality at the time of first feeding. The causes were not known.

Environmental factors influencing the migration and survival of sea trout smolts from the Burrishoole system were discussed in Doc. M:48. Migration did not occur until river water temperatures reached 7°C and were curtailed when a temperature of 13°C was reached. It was felt that the recent reductions in sea trout stocks were a result of increased marine mortality and not a result of any freshwater influences.

Infestation parameters for the salmon louse *Lepeoptheirus salmonis* infesting sea trout in Ireland were described in Doc. M:14. Sea trout from 36 sites were examined during May-July 1993. Some instances of very high infestation rates characterized by a predominance of juvenile stages of the parasite were recorded, suggesting locally high transmission rates of the infective copepodid. Recently emigrated smolts also returned prematurely to freshwater. Infestation levels were lower in 1993 than in 1990-1992. The extended programme in 1993 revealed more locations in the northwest and southwest that had heavy infestations with juvenile lice. There was some discussion on the levels of infestation which could induce mortality. Many of the assumptions used were based on experiments in net pens and the results may not be applicable to wild fish. It was reported that post-smolt salmon in Trondheim fjord in Norway in 1992 had been heavily infested with sea lice, but very good grilse catches had been recorded in 1993.

Information on the infestation of sea trout by sea lice in systems close to and distant from salmon farms in Ireland was presented in Doc. M:56. The paper suggested that the presence or close proximity of salmon farms had a significant positive effect on median infestation intensity, maximum recorded infestation, and percentage of chalimus stages present. Infestation was lower at sites remote from fish farms. It was suggested that remoteness from farms sites seemed to infer that heavy infestations would not develop. However, as some sea trout sampled close to fish farms had relatively low levels of infestation, the presence of a farm did not necessarily infer that transmission of the parasites to wild fish would be intense. Serious reservations were expressed by some members present at the meeting about the sampling methods employed and the analyses of the data.

Doc. M:57 described histological and virological studies carried out as part of the intensive investigation in Ireland to identify the principal features and cause of the collapse of sea trout populations on the west coast. It was concluded that there was no indication that the sea trout population collapse had a systemic infectious aetiology.

The sizes of sea trout eggs from seven Polish rivers were compared (Doc. M:15). The lengths of female fish varied from 39-91 cm, the largest fish being in the Vistula River and the smallest in the Grabow River. Egg size was correlated with length of females.

Smolt production, characteristics, and timing of migration in western Ireland sea trout populations were described in Doc. M:52. Numbers of emigrating smolts in the catchments studied had declined since 1988. There were differences in migration timings in the different rivers examined, but these observations may be influenced by the locations of traps in the river systems. There had been some changes in the age structure of emigrating smolts indicating that there may be strong and weak brood year classes.

Eel Session

A new method for sampling elvers in coastal waters was described in Doc. M:5. A modified drop-trap was used to measure quantitatively the population density of eels in the near-shore zone. The trap may be used in water up to 2.5 m deep, and the eels were collected using a suction pump. Total eel population size may be estimated by combining drop-trap sampling with a vegetation survey.

Methods to assess the current stocks of glass eels entering the Shannon Estuary in Ireland were described in Doc. M:6. Three fishing methods were chosen: hand-netting, the Portuguese Botirão, and conical nets. The conical nets gave the best results. The investigations showed that the Shannon Estuary supported a significant glass eel population which may be trapped successfully using conical nets fished from vertical banks, quays, or bridges. Catches were comparable with those made in commercial fisheries in the River Severn in England and in Portugal.

North Atlantic Salmon Session

A model to estimate the total pre-fishery abundance of the cohort of Atlantic salmon (*Salmo salar* L.) destined to return as 2SW maiden spawners in the 1975-1992 return years was described (Doc. M:24) Pre-fishery abundance declined between the mid-1970s and the late 1980s. Reductions in exploitation levels on 2SW salmon had resulted in an increasing fraction of the cohort returning as 2SW salmon, but the reductions had not been sufficient to offset a general decline in pre-fishery abundance. Without the reductions in the fisheries in Greenland and Newfoundland-Labrador, the total 2SW returns would have been reduced by 60,000-70,000 salmon in recent years.

A run-reconstruction model for the 2SW component of the North American salmon stocks based on observed catches and numbers of returns was described (Doc. M:25). The model was based on the simple premise that the range of feasible exploitation rates and population parameters must be internally consistent with the observ-

ed catches and returns to rivers. The concept that some fish were unavailable to any fishery was introduced. Most 2SW returns were survivors of the West Greenland fishery, with relatively little contribution from the survivors of the Newfoundland-Labrador fishery on non-maturing 1SW fish.

The use of time-series and regression techniques to forecast the abundance of the 2SW component of North American salmon prior to the fisheries in Greenland and North America was described (Doc. M:43). The time-series methods used Holt exponential smoothing applied to historical values to forecast the 1993 abundances. The regression methods used findings relevant to factors controlling post-smolt survival of North American salmon. Winter indices of potential salmon habitat, weighted by research vessel catch rate data, were tested as independent variables. The estimates of abundance provided the basis for fishery catch allocations in Greenland and North America and 2SW escapements in Canada.

The use of a genetic algorithm and neural network software to discriminate North American and European salmon was described in Doc. M:18. Although neural networks had been shown to provide better discrimination of European and North American salmon than discriminant analysis, uncertainty had been expressed about some aspects of their operation. A different neural network was examined which did not require pre-categorization of data, and good classification was achieved. A genetic algorithm which generated a set of rules which could be used as classifiers was tested. This was slightly less successful than the neural network in discriminating the stocks, and the results were more variable. However, it was felt that this technique deserved further evaluation.

A model to determine whether reductions in the proportions of MSW salmon in returns to the Mactaquac Dam, St. John River, Canada could be related to indices of January, February, March, and April habitat for Atlantic salmon in the North Atlantic was examined in Doc. M:29. A model was developed to allow prediction of MSW salmon in year $i+1$ from returns of 1SW salmon in year i. In the model considered, results indicated that the proportions of 2SW and 1SW salmon arising from the 1969-1990 smolt year classes were correlated with the January and February habitat indices for the first year. The reduction in total survival was not explained, but the analysis supported the contention that age at maturity of wild post-smolts could be influenced by changing conditions during their first ten or twelve months at sea.

The effects of the misreporting of grilse as salmon on the reported Scottish salmon catch was discussed (Doc. M:40). Fishermen generally split their catches into salmon and grilse, when both were present, on the basis of weight. As a result, salmon catches were overestimated each year. The error may be large and was not consistent between regions in Scotland or between years, and continued sampling of catches was necessary to permit accurate age splits to be made.

A method for observing the spawning behaviour of farmed and wild salmonids in a natural habitat was described (Doc. M:21). A net enclosure was secured to the stream bed in the middle of a spawning area for wild brown trout (*Salmo trutta* L.) in the River Øyreselv in Norway. Farmed and wild trout were released into the enclosure, and their behaviour was monitored using video equipment. Observations were also made outside the enclosure. The spawning behaviour of wild and farmed trout was similar, although the farmed fish were less vigorous. The contribution to spawning by small, wild males was recorded. Viable offspring of farmed trout were subsequently collected.

A number of factors affecting salmon production in Ireland were identified (Doc. M:35). These ranged from natural factors, such as impassable barriers, competition, and predation, to the effects of agriculture, afforestation, and damming. Changes in land use may increase pollution and eutrophication and increase erosion leading to increased deposition of silt and gravel compaction. The creation of ponds and reservoirs may lead to the drowning of parr habitat, and changes in discharge regimes may affect smolt emigration and adult immigration.

The application of a belief network in Baltic salmon stock assessment was discussed in Doc. D:13. The flexibility of problem formulation and efficiency in knowledge acquisition were emphasized. In normal circumstances, abundance was predicted using VPA analysis. In a sample case presented in the paper, the belief network produced a better forecast of abundance than the VPA model alone. The model may also have applicability in other fish stock assessment operations.

Data on parasites of young and adult salmon from a number of rivers in the Kola Peninsula in Russia were described (Doc. M:55). A total of 55 species was identified, 15 marine and 40 freshwater, including 12 species which were observed in both adult and juvenile fish. Differences were found between parasitic faunas of Atlantic salmon in the Barents Sea and the White Sea.

An analysis of catch statistics and a number of biological parameters relating to salmon from the Kola Peninsula was undertaken to assess the impact on these stocks of the former Norwegian drift net fishery (Doc. M:53). Variations in these parameters for the period 1989-1992, after the closure of this fishery, were analyzed. It was not possible to demonstrate any influence by the fishery. It was possible that the time series of data was too short, and the matter was complicated by the fact that stocks

were influenced by the fishery at Faroes as well as by the Norwegian fishery.

The status of salmon stocks in the Kola Peninsula rivers was discussed (Doc. M:54). Analyses of catch and escapement data indicated that salmon stocks in the Kola Peninsula rivers appeared to be at a satisfactory level and that there was an upward trend in abundance. The status of the salmon population in the Umba River in Russia was discussed in Doc. M:58. The salmon population in this river had been affected by timber operations, illegal fishing, exploitation of the population in the White Sea, industrial pollution of the river, and predation by pike and perch in the many lakes in the system.

Baltic Salmon Session

Doc. M:7 described the effect of environmental factors on the growth of Baltic salmon in the sea. An analysis of growth and environmental data indicated significant multiple correlation among growth rate, water temperature, sprat biomass, and sunspot activity, with the most important factor being sprat biomass.

The use of the genetic stock identification (GSI) method to distinguish between individual stocks of Baltic salmon was described (Doc. M:28). Allele frequency differences between stocks allowed reliable estimates of the migratory and local components to be made, and the Tornionjoki, Simojoki, and Oulujoki stocks could be identified with reasonable accuracy. The advantages of genetic identification over the biases associated with tagging experiments were discussed.

Scale analysis had shown that a small proportion of the catch of salmon in the Gulf of Finland was of wild origin (Doc. M:31). Tagging results had shown that fish originating in rivers flowing into the Bothnian Bay had been caught in the Gulf of Finland. The smolt age of the fish caught was too high for them to have originated in more southerly rivers in the Baltic area.

In the Gulf of Bothnia, wild salmon were found to return to coastal areas and rivers earlier than ranched salmon (Doc. M:34). It was suggested that it would be possible to ensure that sufficient wild salmon returned to their natal rivers by regulating the fishery in the main Baltic Basin in a quantitative manner and regulating the timing of the fishery in the Gulf of Bothnia.

The effects of the disease M-74 were discussed in Doc. M:32. It was suggested that concentrations of toxic substances, particularly organochlorines, had recently increased, and these had been identified in the yolk sacs of alevins. The fear that some wild populations of salmon may be in danger of extinction was expressed.

Changes in the status of the salmon stock in the River Tornionjoki in Finland were described (Doc. M:51). As there had been no environmental changes in the river system and the river had not been dammed, major changes in the stock had been ascribed to changes in the salmon fishery. Intensification of in-river, coastal, and off-shore fisheries since the 1800s had led to serious stock depletion so that in the 1980s, the stock was close to extinction. Concern was expressed that individual countries tried to safeguard their own national fishing interests which might be to the detriment of stocks. It was suggested that political concerns may colour the advice from ACFM. The Chairman of ACFM refuted the allegations that the advice might be affected by political considerations and said that advice was provided to many groups. He offered as an example the catch advice on Atlantic salmon presented to NASCO, which had been accepted by all parties as sound, scientific advice.

Non-Salmonids Session

The use of scale morphology to discriminate between stocks of wild Atlantic striped bass (*Morone saxatilis*) from the Hudson River, Chesapeake Bay, and the Roanoke River, USA was investigated (Doc. M:26). When all three stocks and all year classes were considered, only 51% overall were correctly classified. When only one age class was considered, the overall correct rate increased to 61%. When only the Chesapeake Bay and Hudson River stocks were considered, performance improved to 69% correctly classified and with only one age class, correct rates reached 80%.

The use of otolith microchemistry to track the migrations of estuarine and coastal striped bass was described in Doc. M:41. It was found that the strontium:calcium ratio in otoliths was directly related to salinity experienced by the fish. Temperature had a relatively minor, but significant, effect on the ratio. Otolith Sr:Ca levels were different in males and females, indicating important differences in residence and estuarine and coastal movements between the sexes. It may be possible to extend the use of this technique to investigate migrations in other species such as salmonids, eels, and the bay anchovy (*Anchoa mitchilli*).

The distribution patterns and production of early life stages of European smelt (*Osmerus eperlanus* L.) from the Elbe River were described (Doc. M:39). Smelt spawned in the Elbe in April in freshwater about 140 km upstream from the mouth. The early life stages were gradually entrained in a tidal drift system downstream in the upper estuary within a period of 6 days. Horizontal movement occurred with the larvae concentrating in shallow water regions with slower currents at the southern margins of the estuary where zooplankton densities were maximal. Variations in vertical abundance of smelt larvae

were observed with significant differences between the three layers sampled.

The length and weight of river lampreys (*Lampetra fluviatilis* L.) from Finland, Latvia, Lithuania, and Poland were compared (Doc. M:17). The lampreys were smallest in Finland, larger in Latvia and Lithuania, and largest in Poland. It was felt that temperature may have an effect on growth rates in the different populations.

Recommendations

The Committee considered the terms of reference of the Working Group on North Atlantic Salmon which would meet in Reykjavik, Iceland from 6-15 April 1994. The representative of NASCO commented that the specified dates were late and might seriously affect the advice of ICES to NASCO.

In response to a question from NASCO, the ANACAT and Mariculture Committees recommended that a Study Group on Interaction of Wild, Ranched (Enhanced), and Reared Salmon should be established and meet under the chairmanship of Mr A.F. Youngson (UK) in Reykjavik, Iceland from 5-6 April 1994 and report to the Working Group on North Atlantic Salmon. The Study Group should develop preliminary plans for a Joint ANACAT and Mariculture Committee Session at the 1995 Statutory Meeting in Copenhagen on the topic "Interactions of Wild, Reared, Enhanced, and Ranched Salmon".

The Committee recommended that a Workshop on Salmon Spawning Targets in the North-East Atlantic should be held under the chairmanship of Mr E.C.E. Potter (UK).

The Committee recommended that the Study Group on Stock Identification Protocols for Finfish and Shellfish, under the chairmanship of Dr K. Friedland (USA), should meet in 1994.

The Committee recommended that ICES join EIFAC in co-sponsoring a Working Group on Eel under the chairmanship of Dr C. Moriarty (Ireland).

The Committee recommended that a Study Group on Anadromous Trout be established under the chairmanship of Mr B. Jonsson (Norway).

The Chairman drew the Committee's attention to an ACME recommendation that a Study Group on Occurrence of M-74 and Similar Reproductive Disturbances in Fish Stocks should be established.

Any Other Business

A statement was made regarding the concern which had been expressed over the data presented and conclusions drawn in Doc. M:56. The authors rejected the comments that there were inadequacies in the sampling protocol and in the analyses undertaken and were prepared to submit the paper for review by any scientific panel.

DOCUMENTS

M:1		Report of activities, 1992
M:2		Publications of interest to the Anadromous and Catadromous Fish Committee, 1992
M:3 Ref. G,H, J,K		Report of the Study Group on Stock Identification Protocols for Finfish and Shellfish Stocks, Copenhagen, 16-19 August 1993
M:4		ICES compilation of microtag, finclip and external tag releases in 1992
M:5	H. Westerberg *et al.*	A new method for sampling elvers in the coastal zone
M:6	R.E. Donnelly *et al.*	The management of glass eels in the Shannon estuary, Ireland
M:7 Ref. J	O. Vasin *et al.*	The effect of environmental factors on Baltic salmon growth in the sea
M:8		Withdrawn
M:9 Ref. C+H	S. Gudjónsson *et al.*	Relation of grilse/salmon ratio to environmental changes in several wild stocks of Atlantic salmon in Iceland

M:10 Ref. C+H	T. Antonsson *et al.*	Possible causes of fluctuation in stock size of Atlantic salmon in northern Iceland
M:11	M. Jóhannsson *et al.*	Anadromous brown trout (*Salmo trutta* L.) populations in southern Iceland
M:12	S. Gudjónsson	Marking and tagging of sea trout (*Salmo trutta* L.) in the river Ulfarsá in southwest Iceland
M:13 Ref. C+H	K.D. Friedland *et al.*	The production of North American and European Atlantic salmon: effects of postsmolt growth and ocean environment
M:14	O. Tully *et al.*	Infestation of sea trout (*Salmo trutta* L.) by the salmon louse (*Lepeophtheirus salmonis* Kroyer) in Ireland during 1993
M:15 Ref. J	R. Bartel and M. Parlinska	Size of the sea trout (*Salmo trutta* L.) eggs from 7 investigated Polish rivers
M:16 Ref. J	R. Bartel	Present status of the Vistula sea trout
M:17 Ref. J	R. Bartel *et al.*	Comparison of length and weight of river lamprey from Finland, Latvia, Lithuania and Poland
M:18	E.C.E. Potter *et al.*	The discrimination of North American and European salmon using a genetic algorithm and by neural network
M:19	I.C. Russell *et al.*	Recoveries of coded wire microtags from salmon caught at West Greenland in 1992
M:20		Withdrawn
M:21	Ø. Skaala *et al.*	A method of observing the spawning behaviour of farmed and wild salmonids in a natural stream habitat
M:22	O. Christensen *et al.*	Review of the Danish stocks of sea trout (*Salmo trutta*)
M:23		Withdrawn
M:24	P.J. Rago *et al.*	Estimation and analysis of prey-fishery abundance of the two sea winter population of North American Atlantic salmon (*Salmo salar*), 1974-1991
M:25	P.J. Rago *et al.*	A continental run reconstruction model for the non-maturing component of North American Atlantic salmon: analysis of fisheries in Greenland and Newfoundland-Labrador, 1974-1991
M:26	A. Richards and Chr. Esteves	Discrimination of wild stocks of Atlantic striped bass (*Morone saxatilis*) using scale morphology
M:27		Withdrawn
M:28 Ref. J	M.-L. Koljonen	Genetic stock composition analyses of Baltic salmon catches
M:29 Ref. C+H	T.L. Marshall *et al.*	Forecasting multi-sea-winter salmon returns to the Saint John river, N.B., Canada
M:30		Withdrawn

M:31 Ref. J	E. Ikonen *et al.*	The origin of wild salmon in the Gulf of Finland landings
M:32 Ref. C,H,J	E. Ikonen	The possible effects of environmental and oceanographic factors on abnormally high salmon fry mortality in the Baltic Sea
M:33 Ref. J	A. Ahvonen and E. Ikonen	The effects of stocking time, area and site and smolt size on the results of Finnish Sea trout tagging experiments
M:34 Ref. J	E. Ikonen and I. Kallio-Nyberg	The origin and timing of the coastal return migration of salmon (*Salmo salar*) in the Gulf of Bothnia
M:35	M.F. O'Grady and P.G. Gargan	Factors affecting salmon production in Irish catchments
M:36		Withdrawn
M:37		Withdrawn
M:38		Withdrawn
M:39	A. Sepulveda *et al.*	Distribution patterns and production of early life stages of European smelt, *Osmerus eperlanus* L., from the Elbe river
M:40	D.A. Dunkley *et al.*	The effect of misreporting grilse as salmon on the reported Scottish national catch
M:41	D.H. Secor *et al.*	Tracking the migrations of estuarine and coastal fishes using otolith microchemistry
M:42 Ref. C+H	D.G. Reddin and K.D. Friedland	Marine environmental factors influencing the movement and survival of Atlantic salmon
M:43	D.G. Reddin *et al.*	Forecasting the abundance of North American 2-sea winter salmon stocks and the provision of catch advice for the West Greenland salmon fishery
M:44	R. Poole *et al.*	The performance of sea trout (*Salmo trutta*) stocks from the Burrishoole system, 1970-1992
M:45		Withdrawn
M:46		Withdrawn
M:47	M. Dillane and R. Poole	Survival progeny of reconditioned sea trout
M:48	K.F. Whelan *et al.*	Environmental factors influencing the migration and survival of sea trout (*Salmo trutta* L.)
M:49		Withdrawn
M:50	J. Domagala and H.S. Faryniarz	Number of pyloric caeca as a possible herd marker for sea trout (*Salmo trutta* L.) in the Pomeranian rivers
M:51 Ref. J	V. Pruuki	Changes in the status of the salmon stock in the river Tornionjoki

M:52	M.M. O'Farrell *et al.*	Western Ireland migratory trout: smolt production, timing of migration and biological characteristics
M:53	A.V. Zubchenko *et al.*	Salmon rivers in the Kola Peninsula - Evaluation of the impact from the Norwegian drift net fishing on the status of Atlantic salmon stocks in some Barents Sea rivers
M:54	A.V. Zubchenko *et al.*	Salmon rivers in the Kola Peninsula. Status of Atlantic salmon stocks
M:55	V.K. Mitenev	Parasitic fauna of the Barents Sea and White Sea salmon, *Salmo salar* L.
M:56	P. Gargan and K.F. Whelan	The incidence of prematurely returning sea lice infested sea trout in Irish rivers, 1990-1993
M:57	T. Murphy *et al.*	Histopathological and virological investigations into the collapse of the sea trout population in the west coast of Ireland
M:58	A.V. Zubchenko and O.G. Kuzmin	Salmon rivers in the Kola Peninsula. Reproductive potential and stock status of Atlantic salmon from the Umba River
M:59	M. Salminen *et al.*	Differences in the production of Baltic salmon (*Salmo salar* L.) in the Gulf of Finland and in the Bothnian Sea - the significance of marine productivity and environmental stability

MARINE MAMMALS COMMITTEE

Chairman: Dr A. Björge
Rapporteur: Dr R.V. Miller

The Marine Mammals Committee had three sessions, two on 25 September and one on 27 September. The Committee reviewed and discussed reports from Study and Working Groups and Workshops with relevance to marine mammals. Further, the Chairman invited the Committee to discuss possible structures of future Study and Working Groups under the Marine Mammals Committee in light of the ongoing process of changes within the ICES structure. The Committee also discussed the forthcoming NAFO/ICES Symposium on the "Role of Marine Mammals in the Ecosystem" and suggestions for Theme and Joint Committee Sessions at the 1994 Statutory Meeting. Finally, the Committee reviewed the scientific contributions submitted to the present meeting.

Harp and Hooded Seals

The ICES/NAFO Workshop on Survey Methodology for Harp and Hooded Seals was convened in Archangelsk, Russia, 5-12 October 1992. The report was presented by the Chairman of the Workshop, Mr F. Kapel. The Workshop reviewed the merits of methods used in surveys of seals and discussed the potentials of new technology and methods. Although alternative methods were discussed, the Workshop focused on aerial surveys. The importance of separate reconnaissance and estimation surveys was underlined, and the Workshop compiled a check-list of factors that were likely to cause biases in abundance estimates from areal surveys.

Further, the Workshop recommended that the direction and extent of potential errors should be estimated whenever possible using appropriate statistical techniques, and that these statistical evaluations be considered by groups using these data in population estimation. The Workshop also suggested that a future Workshop be held to examine the statistical aspects of estimation survey methods.

The Committee endorsed the recommendations of the Workshop and underlined the urgency of having the attendance at future Workshops of relevant expertise in statistics.

Mr Kapel informed the Committee of a recent meeting of the Working Group on Harp and Hooded Seals held in Copenhagen. The Working Group made a new assessment of the harp seal population in the Greenland Sea and reviewed new information on food and feeding habits of harp and hooded seals.

Seals and Small Cetaceans in European Seas

The Study Group on Seals and Small Cetaceans in European Seas met in Cambridge, England, 31 March - 2 April 1993 under the chairmanship of Dr J. Harwood. In the absence of the Study Group Chairman, the report was summarized by the Committee Chairman.

The Study Group gave updated information on the current status of marine mammal populations in European coastal waters, with emphasis on harbour, ringed, and grey seals, harbour porpoise, and bottlenose and common dolphins.

It was noted that harbour seal populations that suffered severe declines during the 1988 PDV-epizootic showed very different recovery rates. The population in the Kattegat/Skagerrak which suffered 60% mortality was predicted to reach the pre-1988 level by 1997. On the east coast of England, however, the population suffered 50% mortality in 1988, and the counts had since been constant at about 1,500-1,550.

It was further noted that while small changes were recorded for some grey seal populations, the large populations at Orkney, Hebrides, and the Scottish mainland had grown at an annual rate of about 10% since 1990.

The Study Group cited some abundance estimates for small cetaceans with limited geographical coverage, and referred to the plans for a major international survey of small cetaceans in the North Sea in 1994.

When reviewing the incidental take of marine mammals in European fisheries, the Study Group was hampered by the general lack of information from the fisheries. The Study Group was not able to amplify the suggestion it made last year that mortality of ringed seal may be reduced by delaying the opening of the drift net fishery for Baltic salmon. The Group found observer schemes to be the most relevant method to obtain reliable information on by-catches and recommended that such schemes be continued in fisheries where they had been introduced and that similar schemes be used to document by-catch in other specific fisheries using actively fished gear.

The Study Group recommended that it meet again to conduct a comprehensive review of the current and historical size of marine mammal populations within its area, and methods used to estimate them, and to develop a standardized format for presenting this information.

Further, the Group should assess the relative importance of factors which were believed to have an effect on survival and reproduction in marine mammal populations, and identify what research was necessary to clarify and quantify these effects.

The Committee recognized the effort made by the Study Group to cover its broad terms of reference and acknowledged the comprehensive Study Group report. The Committee also endorsed the recommendations made in the Study Group report. The Committee, therefore, recommended a new meeting of the Study Group to be held in Cambridge, England, 28 February - 4 March 1994 with terms of reference as proposed by the Study Group.

A request to review the by-catch of ringed seals in the Baltic salmon fisheries would be dealt with by the Baltic Salmon and Trout Assessment Working Group. This request was, therefore, not specified in the terms of reference of the Study Group.

A specific request was raised at the Committee meeting that the Study Group should review the spatial and temporal distribution of foraging seals in Irish coastal waters and study the origin of these seals. Due to the comprehensive terms of reference for the next meeting, this request was deferred for discussion at next year's meeting of the Committee.

It was pointed out that the Study Group could have benefited from the participation of experts on fishing gear technology and scientists holding information on marine mammals collected on seabird surveys. It was, however, underlined that although the Study Group Chairman may invite experts to this Group, the Group's members were nominated by the respective ICES Member Countries.

The NAMMCO Scientific Committee had planned a major North Atlantic Sighting Survey for 1995. With reference to the survey for small cetaceans in the North Sea planned for 1994, the Marine Mammals Committee urged the coordination of future surveys to maximize a simultaneous geographic coverage of the areas.

Long-Finned Pilot Whales

The Study Group on Long-Finned Pilot Whales held its first meeting in Copenhagen, 30 August - 3 September 1993 under the chairmanship of Prof. D. Butterworth. The report was presented by Dr N. Øien.

The Study Group reviewed all available information on stock structure and identity, and agreed that this information was not inconsistent with the hypothesis of a single North Atlantic stock of long-finned pilot whales, but that the present information was too limited to substantiate such a conclusion.

There was an estimate of 778,000 pilot whales over a large portion of the eastern Atlantic, but no comprehensive estimate was available for the western regions. The pilot whale population was divided into pods (grind) which were discrete units in the complex social and reproductive organization of pilot whales. The key question pertinent to an evaluation of the status of long-finned pilot whales was which portions of the North Atlantic population (composed of mobile pods) were subject to exploitation by the highly localized harvest.

The Study Group identified a list of 22 items for future work, of which 13 items should be addressed before the next meeting of the Group.

The Committee welcomed the substantive progress made by the Study Group and endorsed the suggestions for further work, including further meetings of the Group.

Distribution and Sources of Pathogens in Marine Mammals

An ICES Workshop on the Distribution and Sources of Pathogens in Marine Mammals was convened in Cambridge, England, 23-26 March 1993 under the chairmanship of Dr J. Harwood.

In the absence of the Workshop Chairman, the report was summarized by the Committee Chairman. The viruses were regarded as the most significant cause for recent mass marine mammal die-offs. Bacteria, however, may cause significant mortalities among seal pups. Other known pathogens to marine mammals included fungi, toxin-producing algae, protozoa, and macroparasites.

The Workshop further discussed the role of contributory factors and underlined the potential immuno-depressing effects of some contaminants.

When assessing risks of future outbreaks of infectious diseases, the Workshop focused on actions to reduce the risks for endangered and threatened populations. The Workshop recommended that rehabilitation centres in general, but especially those which may be involved in re-introduction programmes for threatened or endangered populations, should have a well-defined protocol for evaluating the risks of introducing novel pathogens to these populations.

The Workshop recommended that four Working Groups be established to develop standard protocols and methods for: 1) pathology and medicine, 2) infectious diseases, 3) toxicology, and 4) ecology.

Without having the expertise available for an in-depth evaluation of the Workshop report, the Committee endorsed the Workshop recommendations on the assump-

tion that further work would be conducted without any economic commitment by ICES.

Future Structure of Study and Working Groups under the Marine Mammals Committee

The Chairman referred to the newly established Advisory Committee on the Marine Environment and the ongoing discussion on how to handle questions relevant to marine mammals within ICES. In light of the new structure of ICES and its enhanced role in providing scientific advice on marine mammals, he suggested a new set of three Working Groups under the Marine Mammals Committee for gradual replacement of the current Study and Working Groups relevant to marine mammals.

To substantiate the communication between the Marine Mammals Committee and ACME, and the scientific basis for ACME's involvement in marine mammal advice, a Working Group on Pollution and Diseases in Marine Mammals should be established.

Likewise, a Working Group on Marine Mammal Population Dynamics should be established to substantiate the cooperation between the Committee and ACFM, and to strengthen the basis for advice on questions relevant to the status of marine mammal populations.

Thirdly, a Working Group on Marine Mammal Trophic Relationships should be established to facilitate the inclusion of marine mammals in ICES multispecies work.

A Chairman and a core of experts with first-hand experience in the respective fields should be identified for each of these three Working Groups. The additional participants to Working Group meetings may vary pending the species or geographical areas under discussion at the particular meetings.

Members of the Committee pointed out potential benefits and disadvantages to the proposed future structure of marine mammal Working Groups. The Committee agreed that the Chairman should seek advice on these questions within ICES before the Committee would make its final recommendation on the structure of future Working Groups.

During this discussion, Committee members stressed the importance of having Study and Working Group Chairmen present at the Statutory Meeting and Committee sessions. Specific reference was made to the Study Group on Seals and Small Cetaceans in European Seas (Doc. N:3) and the Workshop on the Distribution and Sources of Pathogens in Marine Mammals (Doc. N:6), where no one was present from the respective meetings to present the reports.

Joint NAFO/ICES Symposium on the "Role of Marine Mammals in the Ecosystem"

Mr J. Sigurjónsson reported on the plans for the joint NAFO/ICES Symposium to be held from 6-8 September 1995 in Dartmouth, Canada. A first announcement with call for papers would be distributed in January 1994.

Theme Sessions and Joint Committee Sessions for 1994 Statutory Meeting

The Committee discussed a proposal for a Theme Session and another proposal for a Joint Session with the Marine Environmental Quality Committee.

Theme Session on "Multispecies Interactions of Importance to Groundfish Abundance Fluctuations"

In light of the location of the 1994 Statutory Meeting and the large interest in interaction between marine mammals and groundfish on the shelf of Nova Scotia, the Committee found this topic suitable for a Theme Session in 1994. However, some members of the Committee felt that these questions would be addressed in depth at the forthcoming NAFO/ICES Symposium on the "Role of Marine Mammals in the Ecosystem".

Joint Marine Mammals/Marine Environmental Quality Committee Session

The Committee agreed that it was timely to have a Joint Session with MEQC to address some of the current questions on the effect of pollutants on the health and development of marine mammal populations. The Chairman was asked to collaborate further with the Chairman of MEQC to plan a Joint Session and take steps to ensure relevant papers were submitted.

Scientific Contributions

The Committee reviewed and discussed papers presented on the following topics:

Surveys and Survey Techniques: Docs. N:9, N:23, and N:24.

Distribution and Abundance: Docs. N:14, N:16, and N:22.

Foraging Ecology and Interactions with Fisheries: Docs. N:7, N:8, and N:17.

Other Topics: Docs. N:12 and N:13.

DOCUMENTS

N:1		Report of Activities, 1992
N:2 Ref. B,D,G, H,J,K		Report of the ICES/NAFO Workshop on Survey Methodology for Harp and Hooded Seals, Archangelsk, Russia, 5-12 October 1992
N:3		Report of the Study Group on Seals and Small Cetaceans in European Seas, Cambridge, England, 29 March - 2 April
N:4		Publications of interest to the Marine Mammals Committee, 1992
N:5 Ref. A		Report of the Study Group on Long-Finned Pilot Whales, Copenhagen, 30 August - 3 September 1993
N:6		Report of the Workshop on the Distribution and Sources of Pathogens in Marine Mammals, Cambridge, England, 23-26 March 1993
N:7	T. Haug *et al.*	Studies of minke whale *Balaenoptera acutorostrata* ecology in the Northeast Atlantic: preliminary results from studies of diet and food availability during summer 1992
N:8	K.T. Nilssen *et al.*	Diets of harp seals *Phoca groenlandica* feeding between the breeding and moulting seasons in the southern Barents and White Seas
N:9 Ref. B,D,G, H,J,K	N. Øien and T. Øritsland	Aerial and visual surveys to estimate harp seal pup production in the Greenland Sea
N:10		Withdrawn
N:11 Sess. P	G. Kirkwood	Incorporating allowance for risk in management: the revised management procedure of the International Whaling Commission
N:12	T. Similä and L. Lindblom	Persistence of natural markings on photographically identified killer whales (*Orcinus orca*)
N:13 Ref. H	M. Goujon *et al.*	Incidental catches of cetaceans by the French albacore tuna drift fishery. Preliminary results
N:14	G. Garcia-Castrillo *et al.*	Les mammifères marins du nord et du nord-ouest de l'Espagne en 1992
N:15		Withdrawn
N:16 Ref. B,D,G, H,J,K	G.T. Waring	Spatial patterns of five cetaceans along a linear habitat
N:17 Ref. G	M.A. Collins *et al.*	Predator damage to net caught angler fish (*Lophius piscatorius* and *L. budegassa*) off the south coast of Ireland
N:18		Withdrawn
N:19		Withdrawn
N:20		Withdrawn

N:21		Withdrawn
N:22	Yu. K. Timoshenko	Dynamics of age composition of harp seal from the White Sea population
N:23	V.I. Chernok *et al.*	Increase of precision in estimates for abundance of harp seal on puppy gatherings
N:24	V.A. Potelov and V.N. Svetochev	Evaluation of seal abundance by method of abundance alteration in conventional "starting population" (The White Sea population of harp seal as example)

REPORTS OF JOINT COMMITTEE SESSIONS AND THEME SESSIONS

JOINT SESSION OF PELAGIC, ANACAT, AND HYDROGRAPHY COMMITTEES ON EFFECTS OF OCEANOGRAPHIC FACTORS ON SURVIVAL AND DISTRIBUTION OF FISH

Conveners: Mr O. Hagström, Mr Á. Isaksson, and Prof. T. Osborn
Rapporteur: Mr D.A. Dunkley

This Joint Committee Session was held on Saturday 25 September to consider the effects of oceanographic factors on survival and distribution of fish. Co-Conveners were Mr O. Hagström, Mr Á. Isaksson, and Prof. T. Osborn.

The first paper (Doc. H:18) discussed the interesting hypothesis that herring migrations could be controlled by learning processes as well as genetic and hydrographic factors. Three aspects of migration were considered: spawning migrations, feeding migrations, and over-wintering migrations. In each case, it was postulated that although younger age classes of herring may have a vague idea of where to go, they learn to return to particular areas by following older fish. Thus, "traditional" spawning, feeding, and over-wintering areas were established and maintained. Comparisons were drawn with similar processes observed in migratory birds.

The distribution of larval and 0-group capelin (*Mallotus villosus*) in the Barents Sea in relation to environmental factors was examined in Doc. H:15. Data from the period 1981-1991 were analyzed. Parameters describing the position of the distribution on a west-east scale, and abundance indices of larval and 0-group capelin were correlated with environmental factors such as the inflow of Atlantic water to the Barents Sea, salinity, and temperature. It was felt that larvae may be subject to passive movement. There was a positive correlation between the distributions of larval and 0-group stages.

The influence of hydrographic factors on herring larvae in the Bay of Fundy and Gulf of Maine was considered in Doc. H:31. Site specific studies had documented vertical movement of larvae and had examined the aggregation and movement of larvae. A modelling study was being undertaken in an attempt to rationalize the observed larval herring distribution and behaviour with the hydrography of the area.

The relationship between North Sea herring distribution and environmental factors was considered in Doc. H:23. Positive correlations between sea surface temperature (SST) and herring density in 1989 and 1991 and between water depth and herring in 1988 and 1989 were found. However, in the correlations between SST and herring density, samples were small and the SST data referred only to the first few centimetres of the water column, whereas herring were typically found in the lower pelagic zones away from the surface waters. Thus, any observed correlation must be considered as an indirect relationship, i.e., SST was correlated with an unknown factor which was correlated with herring densities.

Possible causes for the fluctuations in stock size in Atlantic salmon in Northern Iceland were discussed in Doc. M:10. It was found that marine conditions, measured as sea temperature, could explain a large part of the variation in salmon catches, more so than the number of smolts emigrating to sea. In years when sea temperatures were low, colder conditions were also found on land, and in such years, smolt production was reduced and the abundance of juvenile salmon was lower. Stock size in both freshwater and in the sea were affected by climatic and marine conditions. In Doc. M:9, the relationship of the grilse:salmon ratio to environmental changes was described for several Icelandic wild salmon stocks. Both long-term and short-term changes in the grilse:salmon ratio were observed. It was suggested that changes in marine conditions could influence the survival of salmon during their second year at sea, thus changing the grilse:salmon ratio. Climatic changes could also be responsible for long-term changes in the sea age composition of Icelandic salmon stocks.

Return rate, growth, and SST were analyzed to assess factors affecting Atlantic salmon post-smolt survival (Doc. M:13). Return rates from a distinct North American river system showed similar trends over a broad geographical range. Observed growth patterns indicated that winter may be critical for post-smolt survival. Analyses of SST data for northeast and northwest areas in the Atlantic ocean were used to characterize potential habitat area which was then compared with salmon production indices. For North American stocks, the distribution of winter habitat was found to be critical. For European stocks, the findings suggested reduced overall post-smolt habitat availability in recent years which may have resulted from cooling in the North Sea and warming along the southern boundary of the nursery habitat.

The distribution of salmon in the Northwest Atlantic and aspects of survival in relation to environment were described in Doc. M:42. Research vessel catches indicated that salmon of all sea ages occurred seasonally over most of the Northwest Atlantic. Salmon were concentrated in areas with a sea surface temperature of between 4 and 10°C. Data from tagging experiments indicated that salmon could modify their movements depending on SST. An index of habitat available for overwintering salmon in

the Labrador Sea was shown to be related to catches in several countries. The index showed that overwintering habitat had declined since the early 1980s and was more variable in recent years. The significance of marine productivity and environmental stability to production of Baltic salmon in the Gulf of Finland and in the Bothnian Sea was discussed (Doc. M:59). The recapture rate of adult salmon from Carlin tagging experiments was used as an index of survival. In the Gulf of Finland, survival increased with increasing smolt size up to a length of 20 cm, after which no advantage could be demonstrated for larger smolts. In the Bothnian Sea, however, survival increased and interannual variability in survival decreased with increasing smolt size up to a maximum of 28 cm. In the Bothnian Sea, survival rate correlated with the abundance of 0-group herring, whereas in the Gulf of Finland, the abundance of 0-group sprat and the joint abundance of herring and sprat were identified as important for post-smolt survival. The coexistence of herring and sprat in the Gulf of Finland greatly enhanced the stability of feeding conditions and this was reflected in less variable salmon survival rates.

The results of two international surveys of anchovy eggs and larvae in the Black Sea in 1991 and 1992 were presented in Doc. H:48. Most of the anchovy eggs and larvae were distributed in the upper 3 m of the water column, but where downwelling occurred, eggs and larvae were found to a depth of 70 m. In contrast to former surveys, the main spawning areas of anchovy appeared to have shifted from the northern to the southern Black Sea. Long-term studies had shown a decline in the population of anchovy ichthyoplankton since 1988 in the northern Black Sea. This had been associated with the accidental introduction of the northwestern Atlantic ctenophore *Mnemiopsis mccradyi*, although the effects of pollution, eutrophication, and fishing pressure had all had effects.

The effects of changes in the oceanographic environment in the southern Benguela system during the 1980s and early 1990s on the distribution and abundance of pelagic fish stocks was discussed in Doc. H:9. Changes in the environment included changes in wind stress, upwelling, plankton, and leakage of the Aghulas Current water into the Benguela in the form of filaments and rings. Anchovy and sardine populations in the southern Benguela displayed concomitant variability. Seabird populations were substantially affected by the large fluctuations in these prey species. There was a strong indication that the changes in anchovy and sardine stocks were related to processes affecting the transport of eggs and larvae and feeding conditions for spawning adults.

A general discussion followed, led by Mr Isaksson and Prof. Osborn. Both expressed the wish that this Joint Session would signify the beginning of further cooperation between the three Committees involved and, indeed, other ICES Committees. The close relationship between salmon and pelagic species such as capelin and herring was pointed out, as well as the fact that these fish formed important components of the salmon's diet in the sea. It seemed clear that salmon stocks were affected by marine conditions, perhaps more so than by conditions in freshwater, although these were certainly influenced by climatic conditions. There was clearly a need for an inter-disciplinary approach and cooperation between the various ICES Committees to investigate the complex relationships that existed.

The questions to be asked, however, needed to be clarified. It must be made clear what must be predicted so that appropriate analytical techniques may be developed. In addition, irrespective of the techniques used, the details of the life history of the fish under investigation must be borne in mind at all times.

A number of points were made by members present. The question of competition between ranched and wild salmon in the sea was raised. There was little information available on the diets of salmon in the immediate post-smolt phase, but research was underway in Iceland to address this question. The feeding behaviour of older salmon in the sea had been examined and it had been found that the salmon was basically an opportunistic feeder, preying on the food species which happened to be present. Important food species included crustaceans, lantern fish, and squid, as well as sand eels, capelin, and herring. The valuable contributions made by oceanographers to a recent Symposium on "Salmon in the Sea" held in St. Andrews, NB, Canada was recalled, another example of interdisciplinary cooperation. A call was made at that meeting for international cooperation in establishing programmes to track salmon in the sea, collecting oceanographic and biological information at the same time. Such programmes were logistically difficult and very expensive, however.

The effects of the Great Salinity Anomaly were discussed, particularly with reference to its effects on the Atlanto-Scandian herring stock. This stock of fish had been forced to abandon its formerly fixed migration pattern because of the shift in position of the Polar Front.

It was noted that changes in migration patterns had been observed for a number of species including herring, mackerel, blue whiting, and plankton. Much data were available, but there was need for an integrated approach which could draw together these different data sets. It was suggested that the use of habitat indices, as investigated by the Working Group on North Atlantic Salmon, might be of value in the study of other fish species.

Reasons for the disappearance of squid stocks from Norwegian waters were sought. It was noted that squid stocks had disappeared from Iceland in 1965 and this had

been associated with the appearance of the Great Salinity Anomaly.

The need for ICES to determine what was required by managers and to provide timely advice was stressed. As an example, catch advice for the Greenland salmon fishery in 1993 was based on predicted pre-fishery abundance levels of salmon using 1993 environmental data as well as fishery-related information. Where possible, such predictive methods should use the most up-to-date information available and supply the advice to managers as quickly as possible.

DOCUMENTS

H:9 Ref. C+M	L.V. Shannon *et al.*	Recent changes in the environment and in the distribution and abundance of pelagic stocks in the southern Benguela region
H:15 Ref. C+M	A.C. Gundersen	Distribution of larval and 0-group capelin (*Mallotus villosus*) in the Barents Sea in relation to environmental factors, 1981-1991
H:18 Ref. C+M	A. Corten	Learning processes in herring migrations
H:19 Sess. P	A. Corten	The use of the MBAL concept in management advice
H:23 Ref. C+M	D.G. Reid *et al.*	Distribution of North Sea herring and their relationship to the environment
H:31 Ref. C+M	R.L. Stephenson	Herring larvae and hydrography: studies and observations from the Bay of Fundy and Gulf of Maine
H:48	F. Bingel *et al.*	Distribution of anchovy eggs and larvae (*Engraulis enchrasicolus* Cuv.) in the Black Sea in 1991 and 1992 in comparison to former surveys
M:9 Ref. C+H	S. Gudjónsson *et al.*	Relation of grilse/salmon ratio to environmental changes in several wild stocks of Atlantic salmon in Iceland
M:10 Ref. C+H	T. Antonsson *et al.*	Possible causes of fluctuation in stock size of Atlantic salmon in northern Iceland
M:13 Ref. C+H	K.D. Friedland *et al.*	The production of North American and European Atlantic salmon: effects of post-smolt growth and ocean environment
M:42 Ref. C+H	D.G. Reddin and K.D. Friedland	Marine environmental factors influencing the movement and survival of Atlantic salmon
M:59	M. Salminen *et al.*	Differences in the production of Baltic salmon (*Salmo salar* L.) in the Gulf of Finland and in the Bothnian Sea - the significance of marine productivity and environmental stability

JOINT SESSION OF SHELLFISH AND STATISTICS COMMITTEES ON DYNAMICS AND ANALYSIS OF SHELLFISH POPULATIONS

Conveners: Dr R.C.A. Bannister and Dr M.J. Fogarty

The Shellfish and Statistics Committees held a Joint Session to explore methods of shellfish stock assessment and analysis. Ten papers were presented on general stock assessment methods for cephalopods (Doc. K:33), sampling and analysis of shellfish catch and demographic characteristics (Docs. K:20, K:53, and D:51), analysis of growth rates (Docs. K:44, K:64, and K:65), life history and recruitment (Docs. K:18 and K:62), and evidence for chaotic dynamics in landings data (Doc. D:28).

Many of the classical approaches to finfish stock assessment had been applied to different cephalopod stocks (Doc. K:33), although some of their unique life history features such as short life cycles and variable growth rates needed to be taken into account. The importance of squid in the ecosystem was noted. Approaches to the decomposition of size data to determine growth rates had been applied successfully to scallop populations (Doc. K:44) and *Nephrops* (Docs. K:64 and K:65). Interest was expressed in how the discontinuous growth of crustaceans affected modal analysis of size composition data. Both density and physical environmental conditions appeared to affect growth of *Nephrops* in the Irish Sea.

Brown shrimp population dynamics was considered in several papers. There was evidence for increasing total mortality, changes in growth rates, and declining CPUE, landings, and density in several areas (Doc. K:53), and indicated potential problems in some fisheries.

Various methods of population abundance estimation had been employed in shellfish assessments including research vessel surveys (area swept, etc.), DeLury analyses, and length/cohort analyses (Docs. K:33 and K:53). An additional technique based on a simple index-removal method was described (Doc. D:51) which appeared promising for situations when the natural mortality was negligible during the catch season.

The potential role of chaotic dynamics in lobster populations was explored in an analysis of over 100 years of lobster landings data (Doc. D:28). Although correlations with environmental factors were first examined, it was concluded that other over-riding factors had affected lobster landings and that a chaotic attractor may underlie the changes in landings over time.

DOCUMENTS

D:28 Ref. K	G.Y. Conan and F. Söler	Phase-space diagrams, a first approach to chaos modelling of North American landings of *Homarus americanus*
D:51 Ref. K	J.M. Hoenig *et al.*	Index-removal estimators of population size which incorporates information on sampling gear selectivity
K:18	O. Tully	Morphological lipofuscin (age pigment) as an indicator of age in *Nephrops norvegicus* and *Homarus gammarus*
K:20	J.P. Robin and E. Boucaud	Proportion of the squid *Loligo forbesi* and *Loligo vulgaris* in French landings of the Channel bottom trawl fishery; sampling scheme of the Port-en-Bessin landings and preliminary results
K:33 Ref. D	G.J. Pierce and A. Guerra	A review of stock assessment methods used for cephalopod fisheries
K:44	M.A. Collins *et al.*	Aspects of the diet of the squid *Loligo forbesi* in Irish waters
K:53 Ref. D	A. Temming *et al.*	Trends in the size of commercial catches of brown shrimp (*Crangon crangon* L.) along the German coast
K:62	R. Dijkema	Spatfall and recruitment of mussels (*Mytilus edulis* L.) and cockles (*Cerastoderma edule* L.) on different locations along the European coast
K:64 Ref. D	J.P. Hillis and O. Tully	Possible advances with the ageing of female *Nephrops* by separation of normal curves in length-frequency distributions
K:65	J.P. Hillis and O. Tully	Growth rate, mortality and small mean size in Irish Sea *Nephrops*

JOINT SESSION OF STATISTICS, DEMERSAL FISH, PELAGIC FISH, SHELLFISH, BALTIC FISH, MARINE MAMMALS, AND FISH CAPTURE COMMITTEES ON SURVEY DESIGN AND ANALYSIS

Convener: Dr M.J. Fogarty

Doc. D:31 evaluated the performance of alternative sampling strategies and variance estimators when stock distribution was spatially correlated, contained random process errors, and contained non-stationary components, e.g., as for North Sea herring. Simulated distributions were surveyed using eight different designs, including random transects, five different levels of stratification, and systematic spacing of transects from a random or centred start. Alternative estimates of variance of the sample mean were made as the sample variance, the pooled within-strata variance, and two geostatistical estimation variances, using spherical and exponential models with nugget. The sample variance estimator was biased for all strategies except simple random sampling. The pooled variance estimator was biased with systematic or low densities of stratified samplings. When the survey objective was precise estimation of abundance, systematic strategies performed best. When the objective was precise estimation of variance, the best strategy was two transects per stratum.

Doc. D:56 by W. Warren extended work begun last year to address the question of whether some stations in a random survey design should be fixed. Persistence was indexed as percentage change in all survey points from year to year; if a spatial pattern was persistent, the change at all points in the survey area would be the same. Persistence between years would justify fixed stations. Between 1985-1992, persistence was strong within NAFO Division 3L for cod, and although strong over adjacent years, decayed over time for Divisions 2J and 3K (1985-1991). It was concluded that sampling with partial replacement would thus have been a viable procedure, especially if the locations of fixed stations were changed progressively. For Divisions 2J and 3K, substantial shifts in spatial distribution were observed between 1988 and 1989, and this loss of persistence would reduce the expected precision of the estimate of change between those years.

In Doc. J:9, the contributions of different stocks to total abundance of 0-group plaice in the Kattegat and Belt Sea were estimated based on anal fin ray counts for larvae from 1950-1992. In the Kattegat in 1985, the Skagerrak component dominated; while in 1991, some larval inflow from the Belt Sea was observed. The relative contributions of Skagerrak, North and South Kattegat, and Belt Sea components to different areas by year were described. It was concluded that a good year class in one of the Kattegat areas depended on input from more than one of the stocks. Based on correlations of abundance with temperature and salinity, it was also concluded that under conditions of outflow from the Baltic in spring, salinity was low and recruitment in the southern area was high (Belt Sea component). In the northern regions, high temperatures in the spring indicated inflow from the North Sea and Skagerrak, with high recruitment from the Skagerrak component. Conditions producing original characteristic fin ray counts (1938) were believed to remain the same, to enable application to recently collected specimens.

Doc. G:21, by A. Cotter described an intercalibration of groundfish survey gears. The analysis was based on linear regression analyses of declines in log numbers of year classes where two intersecting regression lines were fitted as part of a single model. Other factors including year class, sex, vessel, and area were reflected, as appropriate. One analysis was applied to the survey in which gear had been changed, with estimation of the arising discontinuity due to the new gear. This was compared with results from a concurrent survey in which there was no gear change.

An outline of the topics covered in Doc. N:2, the report of the ICES/NAFO Workshop on Survey Methodology for Harp and Hooded Seals, was provided. The report included a review of techniques and new technology for estimating abundance, a list of problems associated with areal surveys, and a partial list of solutions.

Doc. N:9 included a review of sources of potential bias in photographic and visual surveys used to estimate harp seal pup production. In both surveys, bias would arise if not all whelping patches were detected or photographed, e.g., due to ice conditions, if whelping occurred outside the main patches or periods surveyed, or if pups were scattered between patches. In photographic surveys, bias (leading to underestimates) would arise if objects were not detected in photographs, e.g., if the grid size used in counting the seals was relatively large, or if positives rather than negatives were used as a basis for counts. Visual surveys were sensitive to effects of wind and observer behaviour. Although photographic estimates were lower than visual estimates, results of both methods matched those from mark-recapture experiments.

In Doc. H:36, results of a survey in the area west of the British Isles and in the Gulf of Biscay, 1992-1993, were discussed for mackerel and horse mackerel. A Grande Ouverture Verticale (GOV) trawl was used. In all areas except the Eddystone region, mackerel abundance de-

clined in 1993 relative to 1992. Most of the 1993 catches in the Eddystone region were of the 1991 year class, while in 1992, most of the catches in the region were of the 1990 year class. These results supported the maintenance of the "Cornwall Box" to protect two-year-old mackerel. Mean catch of horse mackerel changed only slightly between the two years.

Doc. K:34 discussed the use of underwater television surveys to make direct observations of *Nephrops* burrows to estimate abundance. This method was considered more reliable than trawl surveying. The survey was stratified by bottom sediment type, and burrow density was found to be higher in regions of finer sediments. The total abundance estimate was an order of magnitude larger than previous Working Group estimates. It may be desirable to reallocate stations to reduce overall variance. Problems encountered in the survey included identifying which burrow systems belonged to individual *Nephrops* and which burrows were empty. Systematic sampling and geostatistical approaches could be investigated, as well as alternative stratification schemes with respect to sediment type or maintenance of a core of stations with re-randomization of others. This approach appeared promising, as densities estimated in the Firth of Forth were similar to abundances estimated from a more realistic VPA obtained for that region.

Doc. B:32 evaluated the effect of the number of transects on acoustically-based biomass estimates, and the value of midwater trawling for species identification in the Bay of Biscay. Increasing the number of transects did not increase the accuracy of estimates. The location of the trawl hauls for identification was important, as species were distributed differentially over the survey area.

Doc. D:45 reported preliminary results of acoustic surveys for Norwegian spring-spawning herring, December 1992. The results were analyzed including correction for extinction in the estimation of mean abundance, and estimation of associated variance using geostatistical methods to reflect spatial autocorrelation. Seven experimental survey grids were implemented. The effect of extinction was to reduce the quantity of fish by about 5%. Equidistant parallel transect-type grids appeared most applicable, even though not covering the entire fjord area; percentage standard errors for those results were lowest among the schemes considered.

Doc. B:16 summarized results of a hydroacoustic survey of abundance of North Sea herring. The shapes and horizontal dimensions of herring schools were mapped with a sonar of narrow horizontal beam width (high resolution). The densities of the schools were measured by echo sounder. School shape ranged from circular to oval, parabolic, square, rod-shaped, and none. Planimeter measurements of the school provided more accurate estimates than assuming circular or elliptical shapes from lengthwise and crosswise measurements. Fish density varied among schools by a factor of 100. School area and volume were strongly related to school biomass, when considered by categories of fish density within school. Classification of schools by density would thus reduce variation in area-to-biomass conversions. It was noted in discussion that herring did not school at night, but aggregated loosely near the surface.

Doc. B:39 was read by title.

Doc. G:40 described results of ring-net sampling of small 0-group cod. The MIK net probably captured the entire length range of larval cod, from 5-45 mm. Catchability varied between day and night for larvae larger than 10 mm, with the ratio of day-to-night catchability decreasing linearly as larval length increased. Compared to the IYGPT trawl, the ring trawl performed better at capturing larvae less than 35 mm. Density estimates from ring-net samples compared favourably with those from echograms, although echo integration may overestimate abundance. Concurrent use of the two methods could be studied during the International Bottom Trawl Surveys.

Doc. G:44 described distribution and growth of the 1991 year class of haddock in the Irish Sea, based on successive groundfish surveys in autumn of 1991; March, June and September 1992; and March 1993. Growth was rapid compared to other stocks, and by March 1993, almost all the haddock in the year class were above the minimum legal landing size (30 cm), with most females sexually mature. The year class was now appearing in 1993 landings, but its biomass was expected to decline after 1993 if fishing mortality (F) was close to 1.0.

Doc. H:44 summarized distribution and production of mackerel eggs in Divisions VIIIb,c and IXa in 1988, 1990, and 1992. Egg production was highest in 1988 and 1992, along Division VIIIc. The distribution of spawning areas was consistent from year to year, although limited to waters of sea surface temperatures below 16°C. Eggs were distributed fairly continuously over the sampled region; the Cantabrian Sea and Galician waters were major areas of mackerel spawning.

Doc. H:48 was taken by title.

Doc. K:24 considered the effect of tractor dredging on cockles. Abundances in dredged and undredged plots were estimated at days 0 (before dredging), 1, 14, and 92. In an area of high abundance, 49% of the oldest cockles were lost on average by dredging, compared to about 31% from an area of lower density. Average loss rates of 9-19% were observed for one-year-old cockles, and 30-34% for spat. Cockles were lost in the dredging process, appearing neither in the catch nor in the estimates of damaged and undamaged cockles after dredging. This may be due to deep burial in the dredging

process, or predation or tidal washing of surface cockles. Significant delayed effects of dredge mortality were confined to one-year-old cockles (vs adults or spat).

In Doc. K:25, trawl survey data from off Barcelona were analyzed, using geostatistical techniques, to describe spatial structure and abundance of *Nephrops*. Spherical models were fitted to variograms, diversity indices were calculated, and individual species distributions were mapped by density. Species were distributed in species-specific patches, which shifted seasonally.

In a summary discussion of themes from the Joint Session, some elements common to the diverse array of survey target species and methods were noted: how were highly aggregated species best surveyed? While geostatistical methods used information about the spatial structure of the population, variance under the method was model-based. Variance, however, may not be stationary, and could be a characteristic to follow over time to inform sampling designs. It may be coupled to other variables which may serve as bases for stratification under classic survey models. Spatial distribution of the species may change over time as well.

The point was raised that estimates of abundance and variance were not the same as mapping. Mapping reflected the current surface, as is. On the other hand, general linear models modelled expected values. General additive models may provide alternative smoothers, e.g., from a gamma density function.

The tradeoffs between the two approaches should be systematically evaluated. For example, if randomization was incorporated, stratification may also be required, which in turn required a knowledge of scales on which to stratify. The geostatistical analog likewise required knowledge of the scale of the distribution pattern, so that sample grids were appropriately spaced. A survey design should preserve maximum information content along with maximum freedom for analysis; for example, was information content lost by allowing randomization if geostatistical methods were used? To get the most information for kriging, was stratified design feasible?

Tradeoffs should be evaluated in the context of the assessment objective. A probabilistic distribution of abundance estimates may be desirable as an assessment output (but was unavailable from a geostatistical method). Both classical and geostatistical methods may give the same abundance estimate, but the most important variance from most assessment perspectives was in VPA estimates of population abundance.

DOCUMENTS

B:16 Ref. D,G,H, J,K,N	O.A. Misund and A. Aglen	On the shape, size and density of North Sea herring schools as mapped by echo integration and accurate sonar projection
B:32 Ref. D,G,H, J,K,N	J. Massé and N. Retière	Effect of the number of transects and identification hauls on acoustic biomass estimates when several species are present in an area
D:31 Ref. B,G,H, J,K,N	E.J. Simmonds and R.J. Fryer	Survey strategies for structured populations; Part II. Precision of variance estimators
D:45 Ref. B,G,H, J,K,N	K.G. Foote	Abundance estimation of herring hibernating in a fjord
D:56 Ref. B,G,H, J,K,N	W.G. Warren	More on persistence and the potential of sampling with partial replacement
G:21 Ref. B,D,H, J,K,N	A.J.R. Cotter	Intercalibration of groundfish surveys using regression analysis of year class mortalities
G:40 Ref. B,D,H, J,K,N	P. Munk	Describing the distribution and abundance of small 0-group cod using ring-net sampling and echo-integration

G:44 Ref. B,D,H, J,K,N	M.J. Armstrong and R.P. Briggs	Distribution and growth of haddock of the large 1991 year class in the Irish Sea, inferred from successive groundfish surveys
H:36 Ref. B,D,G, J,K,N	H. Dornheim	Abundance of pelagic species, especially mackerel and horse mackerel, west of the British Isles and in the Gulf of Biscay in 1991 and 1993
H:44 Ref. B,D,G, J,K,N	A Lago de Lanzos *et al.*	Mackerel (*Scomber scombrus* L.) egg distribution and stage I egg production estimates in Divisions VIIIb,c and IXa N in 1988, 1990 and 1992
H:48	F. Bingel *et al.*	Distribution of anchovy eggs and larvae (*Engraulis enchrasicolus* Cuv.) in the Black Sea in 1991 and 1992 in comparison to former surveys
J:9 Ref. B,D,G, H,K,N	O. Bagge and E. Nielsen	Abundance of 0-group plaice in different areas in the Kattegat and in the Belt Sea in the period 1950-1992
K:24	A.J.R. Cotter *et al.*	An experiment of the effects of tractor dredging on cockles in Burry Inlet, South Wales
K:25 Ref. D	F. Maynou *et al.*	Temporal and spatial structure of crustacean populations on *Nephrops norvegicus* fishing grounds
K:34 Ref. B,D,G, H,J,N	N. Bailey *et al.*	Estimation of *Nephrops* stock biomass on the Fladen Ground by TV survey
N:2 Ref.B,D,G, H,J,K		Report of the ICES/NAFO Workshop on Survey Methodology for Harp and Hooded Seals, Archangelsk, Russia, 5-12 October 1992
N:9 Ref.B,D,G, H,J,K	N. Øien and T. Øritsland	Aerial and visual surveys to estimate harp seal pup production in the Greenland Sea

THEME SESSION ON DYNAMICS OF UPWELLING IN THE ICES AREA (O)

Conveners: Dr E. Hagen and Mr A. Jorge da Silva

The Session took place on 24 September from 09.00 - 13.00 and on 25 September from 09.00 - 11.00. A total of 21 papers and 1 poster were presented. An extra communication was included in the Session, although it had not originally been submitted.

The Session was opened by Dr Hagen who reminded the participants that much progress had been accomplished in the understanding of upwelling since the last ICES-sponsored Symposium on the Canary Current system held in 1978.

Some review papers tackled the major progress and remaining gaps in: 1) understanding upwelling as a boundary process (Doc. C:22); 2) more elaborate numerical models (Doc. C:60); 3) the dynamics of the surface wind driven layer (Doc. C:61); 4) the interaction of upwelling with recruitment of small pelagic fish stocks, and the formulation of an optimum environmental window hypothesis (Doc. L:76); and 5) the conditions for the development of harmful algal blooms in upwelling areas (Doc. L:38).

The progress made in the understanding of the Benguela upwelling system (also the subject of Doc. L:14 - poster) was referred to in Doc. C:7 which suggested that a similar scientific approach, namely the adequate interdisciplinary collaboration, could be applied by the ICES community. Results of observations off the northwest African coast were referred to in Docs. C:34 and L:73.

Most of the remaining papers dealt with the interactions of the water mass distribution and dynamics with the distribution and variability of primary production (Docs. L:32 and L:53) and the composition of phytoplankton (Doc. L:64), zooplankton (Docs. L:62 and L:63), and ichthyoplankton (Doc. L:33) off the Iberian Peninsula. Transient aspects of upwelling (Doc. C:43), mesoscale motion patterns (Doc. C:30), water motions inferred from sequences of satellite images (Doc. C:8), and harmful algal bloom dynamics (Doc. L:66) were also addressed for the same area.

Distribution of phytoplankton species associated with upwelling (Doc. L:18) as well as changes in phytoplankton composition dependent on subpycnocline water intrusions (Docs. L:17 and C:31) were also presented for the southwest coast of Ireland.

An initially unplanned communication was also given by Dr W. Fennel (Germany) on "Kelvin wave controlled upwelling in the western Baltic".

Among the main points raised that required further clarification were the generation mechanisms for upwelling filaments and associated jets. While in some cases such filaments seemed to end as offshore (dissipative) eddies, therefore promoting substantial transport of coastal water to the deep sea, in other cases ADCP observations had revealed that satellite images may be misleading as the associated jet appeared to have simply meandered.

Points that were only touched or not addressed at all in the communications to the Theme Session, but that arose in the discussions, referred to shelf circulation, namely differences between circulation patterns over wide and narrow shelves, flows in the bottom boundary layer and in nearshore regions, as well as the effects of coastline geometry and land topography in wind forcing. The roles of remote and local forcing were also considered topics needing further insight as well as the effects of the wind stress curl.

Multidisciplinary approaches were considered to be still on very weak ground in the ICES community, in spite of the results presented on algal blooms associated with water intrusions along the outer shelf or the relative success of the Optimum Environment Window hypotheses to explain the spawning strategies of small pelagic fish in typical upwelling ecosystems.

Quite a number of the topics raised would be the subject of investigations in on-going projects (MORENA, OMEX) or in projects due to start (SEFOS). Others were regarded as topics to be tackled by proposed ICES Working Groups (HABD) or by world-wide projects (SARP). However, questions like bottom boundary layer flows or nearshore transport would not be specifically considered in these research initiatives, with the same holding true for the observations of wind stress curl.

In view of the particularly good results achieved with the Benguela Ecology Programme, which managed to bring together people of different disciplines in marine science and produce an impressive number of scientific publications (referred to in Doc. L:14 - poster), Dr L.V. Shannon, Director, Sea Fisheries Research Institute, South Africa, was asked by the Conveners to report on the keys to their success. The presentation identified critical success variables and served the participants with some actions TO DO and NOT TO DO, projecting them to the ICES context, in particular recommending whether, for each particular problem tissue, a multi-state multidisciplinary approach was required or viable.

DOCUMENTS

C:7 Sess. 0	M.J. Orren	A review of the intense upwelling system off the southwest coast of Africa - a model for ICES upwelling research
C:8 Sess. 0	J.M. Cotos *et al.*	Upwelling dynamics in Spanish and Portuguese coast. A pilot study from NOAA-AVHRR images and geostrophic winds
C:22 Sess. 0	R.L. Smith	On the process of upwelling: new observations and understanding
C:30 Sess. 0	E. Hagen *et al.*	A case study of meso-scale motion patterns off the Portuguese west coast
C:31 Sess. 0	R. Goward and G. Savidge	The influence of cool water incursions on phytoplankton populations in Bantry Bay, southwest Ireland
C:34 Sess. 0	L. Nykjær and W. Schrimpf	Variability of coastal upwelling and cross-shelf transport off the Northwest African coast
C:43 Sess. 0	M. Mork and A.J. da Silva	Transient upwelling off West Iberia
C:60 Sess. 0	J.A. Johnson	Modelling coastal upwelling
C:61 Sess. 0	D. Barton	Near surface dynamics of coastal upwelling
L:14 Sess.0 **Poster**	L.V. Shannon and K.L. Cochrane	The Benguela ecology programme - an example of a successful interdisciplinary study of upwelling and its biological consequences
L:17 Sess. 0	R. Raine *et al.*	Upwelling around the southwest Irish coast: near surface dynamics and blooms of dinoflagellate *Gyrodinium* cf. *aureolum* (Hulbert)
L:18 Sess. 0	R. Raine *et al.*	Upwelling and the phytoplankton ecology of south-west Irish coastal waters
L:32 Sess. 0	G. Moincoiffé *et al.*	Variability of surface planktonic community metabolism in response to coastal upwelling events in the Ria de Vigo (NW Spain)
L:33 Sess. 0	H.-Ch. John and P. Ré	Cross-shelf zonation, vertical distribution, and drift of fish larvae off Northern Portugal during weak upwelling
L:38 Sess. 0	S. Fraga	Harmful algal blooms in relation to wind-induced coastal upwelling and river plumes
L:53 Sess. 0	A. Bode *et al.*	Variability of phytoplankton biomass and primary productivity in the shelf waters of the upwelling area of N-NW Spain
L:62 Sess. 0	M.E. Cunha	Seasonal variation of the zooplankton biomass over the Portuguese continental shelf
L:63 Sess. 0	M.E. Cunha	Spatial variation of the zooplankton biomass in relation to the hydrographic conditions off the Portuguese coast

L:64 Sess. 0	M.T. Moita	Spatial variability of phytoplankton communities in the upwelling region off Portugal
L:66 Sess. 0	A.J. da Silva and M.T. Moita	Dynamic of toxic dinoflagellates during an upwelling event at the north-west coast of Portugal
L:73 Sess. 0	L. Postel *et al.*	Rostock zooplankton studies off West Africa
L:76 Sess. 0	Cl. Roy	The optimal environmental window hypothesis: a non-linear environmental process affecting recruitment success
Uncoded	W. Fennel	Kelvin wave controlled upwelling in the western Baltic

THEME SESSION ON MANAGEMENT OBJECTIVES AND FISHERY MANAGEMENT TARGETS: RISK ASSESSMENT IN THE PROVISION OF SCIENTIFIC ADVICE (P)

Convener: Dr J.G. Shepherd
Rapporteur: Mr T.K. Stokes

The Session took place from 09.00 - 16.00 on Friday 24 September. A total of 18 papers were presented, all but two by one of the authors. In addition, Dr G. Stefansson (Iceland) gave a brief resumé of the work on related topics at the meeting of the Working Group on Methods of Fish Stock Assessment held in Copenhagen from 3-10 February 1993 (Doc. Assess:12).

The Convener stressed that the subject of the Session was of great importance to ICES. It concerned the problems of how to deal with uncertainty in assessments, both that due to observational error, and that due to lack of knowledge of the future, and how to formulate advice in the light of that uncertainty, which took account of the many (often conflicting) objectives of fishery management. He also pointed out that although the subject was relatively new to ICES, there had been an explosion of interest in the subject, particularly in North America and Australia, in the past four years. There had been at least five international meetings of various sorts at which the subject had been discussed. A selected bibliography of the reports of these was made available (see end of report).

In an invited paper, Dr G. Kirkwood outlined the work of the IWC Scientific Committee leading to the adoption of the Revised Management Procedure. He stressed the importance of evaluating the performance (according to numerous criteria) of the whole package, i.e., data, assessment methods, stock dynamics, management procedure, and feedback, through the impact on the stock.

The papers presented, and the ensuing discussion, showed a general convergence on similar methods. There were, however, two main approaches, namely:

a) those which sought only to evaluate proposed management procedures, according to a number of criteria of interest, in order to find those which were adequate or good;

b) those which sought to find procedures which were in some sense optimal.

The latter approach required one to specify the objective function to be optimized. This may be either risk in the formal sense of expected loss, or a composite objective obtained by weighting and combining measures of performance according to various criteria. The selection of an appropriate objective was difficult and often controversial. Ideally, it should be done by "managers", but it was rare for them to be able to do this explicitly. The former approach was, therefore, probably more practicable for the present, but the latter approach was also useful, not least because it may show that an apparently adequate *ad hoc* procedure was in fact far from optimal!

There was also no clear agreement on whether it was better to present managers with explicit estimates of the risk associated with various options (probability profiles), or construct and select a formal procedure making adequate provision for risk (the IWC approach). This may depend on the sophistication of the managers in question!

For the concluding discussion, a range of views were expressed about the usefulness of the MBAL (Minimum Biologically Acceptable Limit) estimate of stock size recently formally adopted by ACFM. These clearly could be (and had been) misinterpreted by managers. They were, however, essentially no more than the protection levels built into many management procedures, and, if correctly interpreted, supplied a useful warning signal to managers. If formal management procedures were adopted, the need for a sharp contrast in the form of advice above and below the MBAL would disappear.

Finally, it was pointed out by several authors that although it was necessary to allow for uncertainty and risk in assessments, and this may (if properly presented) assist in communication between scientists and managers, the major problems in most cases were the implementation of management policies, not the formulation of these policies. Attempts to make progress with the risk analysis approach were, therefore, necessary, but unlikely to be sufficient.

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Proceedings of the International Symposium of Management Strategies for Exploited Fish Populations (October 1992), Alaska Sea Grant (publ.) (in press).

DOCUMENTS

D:9 Sess. P	B. Mesnil	Using Monte Carlo simulations to account for uncertainties in stock assessments and biological advice for fisheries management. Application to the northern stock of European hake
D:10 Sess. P	W.H. Lenarz	Advice under uncertainty to managers for two fisheries of the northeastern Pacific
D:11 Sess. P	J. Rice	How to reduce the impact of model uncertainty on assessments and advice
D:12 Sess. P	A.A. Rosenberg and V. Restrepo	The eloquent shrug: expressing uncertainty and risk in stock assessments
D:14 Sess. P	Sh.W. Frederick and R.M. Peterman	Choosing fisheries harvest policies: How much does uncertainty matter?
D:16 Sess. P	Ø. Ulltang	Risk analysis and biological knowledge
D:18 Sess. P	A.D.M. Smith	Risk assessment or management strategy evaluation: what do managers need and want?
D:26 Sess. P	J. Horwood	Stochastically optimal management of fisheries
D:38 Sess. P	B.A. Megrey *et al.*	Sensitivity of optimum harvest strategy estimates to alternative definition of risk
D:54 Sess. P	P.A. Shelton and M.J. Morgan	Assessing the risk of failing to achieve replacement recruitment
D:66 Sess. P	R.M. Cook	The use of sensitivity analysis to quantify uncertainties in stock projections
D:69 Sess. P	G.G. Thompson and A.A. Rosenberg	A decision-theoretic approach to fishery management under a depensatory stock-recruitment relationship
D:70 Sess. P	M. Basson	Risk analysis in fisheries management: the Falkland Islands squid fishery as an example
D:71 Sess. P	R. Shotton	Risk, uncertainty and utility: a review of the use of these concepts in fisheries management
G:56 Sess. P	F.M. Baldursson *et al.*	On the rational utilisation of the Icelandic cod stock

H:19 Sess. P	A. Corten	The use of the MBAL concept in management advice
H:32 Sess. P	R.L. Stephenson and D. Lane	Avoiding the risk of ignoring risk: toward a framework for use of risk in decision-making
N:11 Sess. P	G. Kirkwood	Incorporating allowance for risk in management: the revised management procedure of the International Whaling Commission
Assess:12		Report of the Working Group on Methods of Fish Stock Assessment, Copenhagen, 3-10 February 1993

THEME SESSION ON FACTORS AFFECTING THE EXPOSURE OF ORGANISMS TO CONTAMINANTS AT INTERFACES IN THE MARINE ENVIRONMENT (Q)

Convener: Dr H. Windom
Rapporteur: Dr J.M. Bewers

The Session was opened at 16.30 hrs by the Convener who introduced it as an opportunity for biologists and chemists to mutually discuss issues related to chemical contaminant exposures and associated biological effects.

The first paper (Doc. E:25) dealt with an attempt to assess the toxicity of marine and estuarine sediments using Microtox testing and bivalve abnormality induction associated with organic contamination off the northwestern coast of France near Brest. The paper demonstrated correlations between the results of Microtox and bivalve abnormality measurements among areas of differing industrial contamination using both exposures to sediment suspensions and aqueous sediment extracts.

The second paper (Doc. E:26) dealt with the role of cytochrome P450 as a biomarker for exposures to organic contaminants in Venice Lagoon. Despite seasonal variations, hepatic EROD activity in goby was consistently higher at organically-contaminated sites. The results supported the use of cytochrome P450 as a measurement of response to organic contaminants such as polycyclic aromatic hydrocarbons and organochlorines. The paper also suggested the presence of a P450-like enzyme in the digestive gland of mussels that might be a useful indicator of biological effects.

The third paper (Doc. E:27) dealt with interfacial aspects of marine contamination that had a bearing on biological effects measurement strategies. The paper stressed the heterogeneous distribution of chemical contaminants in the marine environment, particularly contaminant accumulation at both internal and boundary interfaces. Furthermore, it was argued that those same interfaces (e.g., the sea-surface microlayer) had resident biological populations from bacteria through to protozoa and that many larger organisms frequently passed through that interface. Mention of various mechanisms for interface formation was outlined as were the processes of suspended sediment accumulation that resulted in heterogenous distributions of organic matter and associated contaminants. It was proposed that those interfaces were, strategically, the appropriate places to employ biological effects testing procedures. In the ensuing discussion, it was pointed out that the role of the microlayer in both chemical and toxicological contexts would depend on the quiescence, or turbulence, of the sea surface and a crucial issue would be the discrimination between naturally-induced and anthropogenically-induced effects.

The fourth paper (Doc. E:28) also discussed interfacial (surface microlayer) contamination and toxicity. The paper described techniques used to obtain sea-surface microlayer and bulk water samples, their subsequent analysis, and their use for biological effects testing using clam, oyster, and turbot larvae. The paper demonstrated the correlation between the concentrations of chemical contaminants and the effects on embryos exposed to microlayer samples. In the discussion, it was noted that the concentration/accumulation of chemicals in the sea-surface microlayer was not in dispute. Neither was the existence of biological effects associated with exposures to microlayer samples disputed. The major element of debate was the claimed, but not yet adequately substantiated, significance of such measurements in relation to the overall impact of the marine environment on biological organisms. This was the issue requiring primary debate and resolution. Neither the marine chemists nor biologists disagreed with that perspective.

The fifth paper (Doc. E:29) dealt with work on sediment pore-water toxicity using sea urchin larvae fertilization success, amphipod bioassays, and Microtox testing. In particular, it related the results of those tests with the results of an application of a revised Long and Morgan 'weight of evidence' approach for defining contaminant concentrations in sediments posing risks of adverse biological effects. It showed that the sea urchin larvae fertilization more closely reflected the results of the Long and Morgan approach for a specific coastal area than the other biological effects tests used. Questions were posed about the temperature and atmospheric controls on the sediment samples between collection and biological exposure testing in the laboratory. Specific concerns were raised about redox changes during collection, storage, and exposure and the need for rigorous precautions to ensure that the sediment character was maintained during this testing procedure.

The sixth paper (Doc. E:32) presented data on lysosomal retention of neutral red, as a cationic probe, for potential use as an indicator of membrane damage. It was proposed that this constituted a sensitive procedure for signifying membranal damage and that the results of this test correlated well with hepatocyte vacuolation and chemical measurements of exposure (to hydrocarbons and chlorinated compounds). The test was clearly reflecting a reversible response as indicated by exposure experiments.

The seventh paper (Doc. E:34) constituted a proposal for a research study as a follow-up to the ICES/IOC Bremer-

haven Workshop on biological effects. Data on chemical contaminant distributions and biological effects in North Sea sediments based on the Bremerhaven Workshop transect and the distributions of chemicals in flat fish determined through the German ZISCH programme were presented as a demonstration of some (claimed as unexplained) coincident trends in chemical distributions and biological effects within the North Sea. The follow-up proposal in the paper was for an examination of the vertical processes of contaminant transport, interfacial accumulation, and associated biological effect index distributions. An important component of the proposed study would be to determine whether the distributional features of dab abnormalities and larvae were due to effects on larvae or adult animals. In discussion, the degree to which confidence could be placed in the Bremerhaven Workshop biological effects results was questioned. In response, it was confirmed that the trend towards higher incidence of effects was evident from responses to a variety of biological effects tests rather than in respect to a single test or to a specific type of organism (e.g., demersal fish).

Finally, an additional (uncoded) paper was presented by Dr W. Cofino (Netherlands) on the composition and effects of discharges from offshore oil extraction facilities in the Dutch North Sea. A study carried out in the Netherlands examined levels causing acute toxicity to a wide range of organisms and the levels of hydrocarbons and metals associated with production water from gas and oil platforms at sea. That information was used to estimate the risks of adverse biological effects in relation to the rates of production water release and the potential rates of dilution of discharges in the receiving marine environment. The three-volume report from which this presentation was drawn was available from Dr Cofino. It provided a means of determining the potential zone of impact around offshore oil and gas platforms and, accordingly, the risks to marine organisms posed by the discharge of production water containing chemicals.

The concluding discussion focused on the significance of the various biological effects tests discussed in the various presentations. It was reiterated that it was generally accepted that there were correlations between the presence of biological effects and the distribution of chemicals in the marine environment both in the context of geography and oceanographic features (e.g., interfaces). The issue of debate was how to determine the significance of those effects specifically in relation to anthropogenic activities, as distinct from natural processes, and in relation to the overall well-being of marine biota. Unfortunately, there was inadequate time to deal more thoroughly with that question, and the Session was closed at 18.25 hrs in the evening.

DOCUMENTS

E:25 Sess. Q	F. Quiniou *et al.*	Effet de sédiments marins et de leurs extraits aqueux sur la bioluminescence d'une bactérie (MICROTOX R) et sur le développement embryonnaire de bivalves
E:26 Sess. Q	D.R. Livingstone *et al.*	Application of cytochrome P4501A induction as a biomarker for impact by organic pollution in goby (*Zosterisessor ophiocephalus*) and mussel (*Mytilus galloprovincialis*) in Venice Lagoon, Italy
E:27 Sess. Q	A.R.D. Stebbing	Interfacial accumulation of contaminants - is there a problem?
E:28 Sess. Q	J.J. Cleary *et al.*	Surface microlayer contamination and toxicity in the North Sea and Plymouth near-shore waters
E:29 Sess. Q	R.S. Carr *et al.*	Sediment quality assessment studies in Tampa Bay, Florida, USA
E:32 Sess. Q	D.M. Lowe *et al.*	Lysosomal membrane danger as an *in vitro* marker of contaminant impact under field and experimental conditions
E:34 Sess. Q	A.R.D. Stebbing	Atmospheric benthic coupling (ABC) - a proposed ICES/IOC research project
Uncoded	W. Cofino	On the composition and effects of discharges from offshore oil extraction facilities in the Dutch North Sea

THEME SESSION ON IMPLICATIONS OF STOCK ENHANCEMENT OF MARINE ORGANISMS (R)

Convener: Ms J.G. Støttrup
Rapporteur: Dr B.R. Howell

The Session was opened at 16.30 hrs by the Convenor who gave a short introduction emphasizing the need for an appraisal of the current status and prospects of stock enhancement.

The first presentation was a report (Doc. F:49) on the Symposium on "Sea Ranching of Cod and Other Marine Fish Species" held in Arendal, Norway earlier this year. Contributions covering a wide range of species indicated that attempts to enhance natural stocks with reared fish had met with mixed success. Studies of red drum in Texas and several species in Japan were among the few examples where positive enhancement had been claimed. Cod enhancement trials in Norway, however, were disappointing and highlighted the evaluation of carrying capacity as a major issue worthy of further study. It was emphasized, however, that those studies had considerably increased our knowledge of coastal and fjordal ecology.

The first of the scientific contributions described experiments with cod releases in the Masfjorden in Norway where a failure to demonstrate enhancement six months after release was attributed to the influence of density-dependent factors. Similarly, a Norwegian enhancement trial with lobsters emphasized the need for studies of density-dependent survival both between and within cohorts. A requirement for reliable population estimates was also recognized.

Three papers provided further evidence that hatchery-reared fish may differ from wild fish in ways which would prejudice their survival in the sea. In that respect, the influence of rearing methods needed to be assessed and appropriate preconditioning procedures devised.

Further contributions on cod and lobster described preliminary economic analyses of enhancement exercises. Both concluded that, although in many cases biological survival was demonstrably high, present-day production costs precluded economic viability.

During the discussion, it was generally agreed that, despite the disappointing results of some recent exercises, further research was needed before a rigorous evaluation of the potential of stock enhancement techniques could be made. A priority should be to examine the validity of the fundamental concept that declining stocks resulted in "excess carrying capacity" which was available to released fish. It was conceivable that stock enhancement may be effective only in conjunction with other interventionist measures such as predator/competitor removal and habitat manipulation. There was general agreement that any future research should be precisely targeted and that ICES should have a coordinating role.

DOCUMENTS

F:4 Sess. R	P. Sandberg and R. Oen	Economic consequences of large-scale sea-ranching of cod in Norway
F:20 Sess. R	C. Hvingel and J.G. Støttrup	How do reared turbot adapt to the environment? II. Condition indices
F:25 Sess. R **Poster**	T.S. Kristiansen and T. Næss	Production and winter survival of diapause eggs from marine calanoid copepods in a big outdoor tank in Norway
F:33 Sess. R	B.R. Howell and S.M. Baynes	Are hatchery-reared sole equipped for survival in the sea?
F:34 Sess. R	T. Svåsand	Are reared organisms suited for release in the wild?
F:49 Sess. R	J.H.S. Blaxter *et al.*	Report from the Symposium on Sea Ranching of Cod and Other Marine Fish Species, Arendal, Norway, 15-18 June 1993

J:18 Sess. R	P.-O. Larsson and J. Pickova	Stock enhancement experiments with cod, *Gadus morhua*, in the Bothnian Sea - conditions and expectations
K:29 Sess. R	G. van der Meeren and H. Næss	Lobster (*Homarus gammarus*) catches in southwestern Norway, including the first recaptures of previously released juveniles
K:63 Sess. R **Poster**	R.C.A. Bannister	The United Kingdom approach to the enhancement of stocks of lobster (*Homarus gammarus* L.)

THEME SESSION ON IMPACT OF GELATINOUS ZOOPLANKTON PREDATORS ON COASTAL AND SHELF ECOSYSTEMS (S)

Convener: Dr M. Reeve
Rapporteur: Dr P. Taylor

The Theme Session was held in the afternoon of 25 September. A total of 10 papers were presented by their authors. The overall quality was outstanding. Two kinds of presentation could be identified, those which dealt with regional case studies and those which dealt with the role of gelatinous predators as a trophic level, and some which were a combination of those.

The range of coastal ecosystems considered was from the Gulf of Mexico to the Azov Sea, and also included Biscayne, Chesapeake, and Narragansett Bays on the east coast of the USA, as well as the German Bight in the North Sea.

Significant topics dealt with were the impact of gelatinous predators on fish larvae in Chesapeake Bay, which was found to be very important, the succession of primary and secondary gelatinous carnivores, and the close coupling of their population dynamics with those of their copepod food and phytoplankton. The use of both modelling and experimental approaches (*in situ* mesocosms) were introduced. A major focus of interest revolved around the apparent ballast discharge introduction of the North American ctenophore *Mnemiopsis* into Black Sea and Sea of Azov waters about a decade ago and its subsequent apparent devastation of local fisheries. Considerable discussion ensued regarding the role of overfishing in that ecosystem, which was reported to be extreme. A related paper reviewed the range of gelatinous zooplankton-feeding fish, which turned out to be much greater than most people had realized. Further considerable discussion revolved around the concept of biological control and the potential hazards of further introductions.

The meeting room was packed to capacity throughout (50 - 60 people), discussions continued throughout the coffee break, and the suggestion to continue the discussions the following morning was taken up. A discussion the following morning was indeed held for over two hours and focused on trying to formulate common joint approaches for future research and cooperation. Amongst suggestions adopted were to submit papers for possible publication in the *ICES Journal* (which Prof. J. Blaxter, the *Journal* Editor encouraged) and the organization of a session on gelatinous zooplankton in the 1994 ICES Symposium on Zooplankton Production.

DOCUMENTS

L:20 Sess. S	G. Schneider	Does *Aurelia aurita* really decimate zooplankton in Kiel Bight?
L:21 Sess. S	J.H. Steele	The role of invertebrate predators
L:36 Sess. S	P. Kremer	Ctenophore population dynamics: patterns of abundance for *Mnemiopsis* in US coastal waters
L:42 Sess. S	J.E. Purcell *et al.*	*In situ* predation rates on Bay anchovy (*Anchoa mitchilli*) eggs and larvae by Scyphomedusae (*Chrysaora guinquecirrha*) ctenophores (*Mnemiopsis leidyi*) in Chesapeake Bay, USA
L:55 Sess. S	E.D. Houde *et al.*	Mesocosms adrift: a method to estimate fish eggs and larvae mortality rates
L:60 Sess. S	W. Greve	Gelatinous zooplankton systems ecology in the German Bight
L:61 Sess. S	W. Greve	German Bight ecosystem responses to the invasion of a Siphonophore

L:68 Sess. S	T.J. Smayda	Experimental manipulation of phytoplankton + zooplankton + ctenophore communities, and foodweb roles of the ctenophore, *Mnemiopsis leidyi*
L:69 Sess. S	S.P. Volovik *et al.*	*Mneiopsis leidyi* in the Azov Sea: biology, population dynamics, impact to the ecosystem and fisheries
L:74 Sess. S	G.R. Harbison	The potential of fishes for the control of gelatinous zooplankton

THEME SESSION ON COMPUTERS IN FISHERY RESEARCH (T)

Conveners: Dr E. Moksness, Dr B. Megrey, and Mr J.W. Ramster

Administrative Matters

About 58 titles were submitted initially to the Session. These were reviewed and arranged to form three presentation sessions under the headings of:

a) GIS (Geographic Information Systems) and digital mapping (five papers);

b) aspects of operational fish stock management (eight papers);

c) techniques of fish stock assessment (six papers).

In addition to these papers, there were 24 posters and/or demonstrations. The posters were on display throughout the Statutory Meeting, but from 15.30 - 18.00 hrs on 25 September, the authors were asked to stand beside their posters and be available to answer questions. About 17 separate live demonstrations of packages of various trends were also presented.

Approximately 80-100 people attended each of the paper presentations and about 40 remained for an additional 45 minutes to discuss various aspects of the Theme Session. The Poster Session provided a very fitting finale, with some 70 people involved, at its peak, in very lively discussions in front of poster boards or PC screens.

Results

The main points made in the discussion session were:

a) "Technology" would make it progressively easier, in time, for scientists to visualize spatial relationships in their data. Advantage should be taken of that fact, but it should be realized that "technology" would not be an end in itself.

b) "GIS" was just a keyword rather than a methodology in marine fisheries at present. "Low-level", "Sub", and "Coarse Grid" GISs also had a place in a global fisheries context, and ICES should join ICLARM and FAO in publicizing this.

c) i) Many software packages were produced which were of potential value to others. To avoid duplication of effort, ICES should consider having formal "Computers in Fishery Research" poster/demonstration sessions at every alternate Statutory Meeting. Member Countries would gain from the sharper focus given to this area of activity.

ii) ICES should also consider setting up, after the model of the Computer User's Section of the American Fisheries Society, a catalogue of routines for, e.g., Monte Carlo simulations, that were in the public domain. This catalogue should be linked to the UNESCO programme that distributed such products worldwide.

d) The area covered by the Theme Session was very wide and it might be more appropriate, in about two years, to think in terms of another Session that would deal with the comparison between data bases, spreadsheets, graphics packages, and the like, and their routine use. Care should be taken, however, to ensure that end-user interests were preeminent: the "computer jockeys" should be kept at bay.

e) Some trends within ICES in the context of the Theme Session were:

i) end users were more PC- than UNIX-based and more IBM- than MAC-based;

ii) relatively few packages were being made available to the general ICES community in a formal way;

iii) the role of high-end GISs in fisheries research was not as clear as it was in, for example, land use and epidemiology, respectively;

iv) the time was approaching when an ICES Study Group could make a recommendation, from experience, of the optimal collection of software packages to be used on a "standard " workstation to tackle the main data management analysis and presentation problems faced by research scientists;

v) developments in fisheries research outside ICES should not be forgotten.

Recommendations

The following recommendations were made by the Theme Session:

a) A "Computing in Fishery Research" poster/ demonstration session should be part of the Statutory Meeting every alternate year.

b) Consideration should be given via a Study Group to the production of a catalogue of existing software in ICES Member Countries and the distillation from it of a recommended optimal collection that would include both high- and low-level GIS products.

c) ICES should consider co-sponsoring a Symposium on "Computers in Fishery Research" to be held in the period 1996-1998 which would also involve the UN family of agencies concerned with marine matters.

DOCUMENTS

Papers

B:7 Sess. T	B. Nakashima and G.A. Borstad	Detecting and measuring pelagic fish schools using remote sensing techniques
B:25 Sess. T	T. Lindem and D. Al Houari	EP-500 - a system for processing and presentation of echogram data produced by the SIMRAD EY-500/EK-500 echosounders
C:9 Sess. T	J.M. Cotos *et al.*	Infrared image integration from METEOSAT and NOAA satellites using cross correlation techniques
C:10 Sess. T	J. Torres *et al.*	Follow-up and prediction of upwelling in the Iberian Peninsula west coast using meteorologic parameters, Ekman flux and satellite remote sensing
C:12 Sess. T	J.W. Ramster *et al.*	The United Kingdom's Digital Marine Atlas (UKDMAP) - an operational tool for fisheries scientists in particular and marine managers and planners in general
D:1 Sess. T	Z.I. Kizner	On the stability of dynamic surplus production models
D:6 Sess. T	G.A.P. Black and R. Mohn	Interactive data visualization of fisheries management systems
D:7 Sess. T	S. Garcia *et al.*	Software for tropical fisheries research: the needs and the response by FAO and ICLARM
D:15 Sess. T	Y. Morizur *et al.*	An automatic data collection by using bar codes
D:23 Sess. T	S. Floen *et al.*	An integrated database for marine research
D:42 Sess. T	D.R. Smyth	Development of a computerised database system for fisheries research
D:44 Sess. T	J.R. Selvik *et al.*	Marine resource data base (MRDB), a database on vulnerable marine resources in Norway
D:62 Sess. T	G. Garofalo *et al.*	Trawlbase, a configurable database for trawl survey data
D:64 Sess. T	G.J. Meaden	Instigation of the world's first marine fisheries GIS

F:23 Sess. T	S. Wheatley *et al.*	An epidemiological investigation of diseases of farmed Atlantic salmon (*Salmo salar* L.) using a relational data base
F:45 Sess. T	T. Lindem and D. Al Houari	Hydroacoustic monitoring of fish in aquaculture - A method for automatic feeding control by detection of fish behaviour
H:13 Sess. T	J.A. Triñanes *et al.*	Monitoring and detection system for operational use in tuna fisheries
K:48 Sess. T	K.J. Collins *et al.*	Analysis of Poole Bay, U.K., lobster data

Posters

B:28 Sess. T	R.J. Korneliussen	Advances in Bergen echo integrator
C:17 Sess. T	M. Ostrowski	"SKAGEX Atlas", a software package for the presentation of results of the International Skagerrak Experiment in the Skagerrak 1990-1991
C:23 Sess. T	J.J. Bisagni *et al.*	Measurements of temporal changes in the circulation of the Jordan Basin - Maine coastal current system
C:35 Sess. T	H. Hardason	The Hugrun family of marine recorders and their applications, showing examples from Iceland and Canada
C:38 Sess. T	T. Knutsen and Y. Følling	Quality control of current measurements made by an Acoustic Doppler Current Profiler (ADCP)
C:55 Sess. T	N. Emerson and D. Burns	Computer-aided sea bed classification
D:19 Sess. T	H. Troadec	TNPC, an assisted system for interpretation of calcified structures
D:25 Sess. T	C.T. Macer and R.A. Ayers	Monthly catch prediction software incorporating changes in fishing effort and mesh size using EXCEL spreadsheets
D:61 Sess. T	The Irish Navy and F. Fleming	Using expert systems to preserve fish stocks in Irish EC waters
D:65 Sess. T	P. Petitgas and A. Prampart	EVA: a geostatistical software on IBM-PC for structure characterization and variance computation
D:72 Sess. T	E. Reichelt Russel and P.C. Young	Australian fisheries: stock assessment, resource status, reporting on GIS developments
D:73 Sess. T	F. Storbeck	"FISHMAP" - A Mackintosh application for a graphical display of geographical distribution data
E:33 Sess. T	L. Barratt *et al.*	Environmental sensitivity mapping of the western Black Sea
F:21 Sess. T	A.M. Cawley and D.M. Kennan	Mathematical modelling - an effective approach to planning and environmental management for the mariculture industry
G:9 Sess. T	S. Mazzola *et al.*	Software package for the assessment of abundance and distribution of demersal fish by fisheries surveys

G:16 Sess. T	M.A. van der Land and H. Welleman	"Bessie Turf" - a Mackintosh application for on-board registration of survey catches
G:23 Sess. T	T.W. Boon	The role of computers in the production of *ICES Cooperative Research Report* "Atlas of North Sea Fishes"
G:29 Sess. T	L. Asgeirsson	Precision weighing at sea
G:35 Sess. T	M.A. Liceaga-Correa and J.A. Diaz-Zavala	Otolith image analysis and its reading with a computer program
H:7 Sess. T	S. Mazzola *et al.*	A software package to study the dynamics of pelagic ecosystems
L:67 Sess. T	Z. Klusek and M. Ostrowski	Software package for environmental monitoring of birds and fish/plankton relationship in the Arctic
L:75 Sess. T	T. Noji	Image analysis at the Institute of Marine Research, Norway

THEME SESSION ON IMPROVING ICES SCIENCE AND COMMUNICATIONS (U)

Convener: Mr D. de G. Griffith
Rapporteurs: Environment Secretary, Fishery Secretary, and Oceanography Secretary

The President of ICES, Mr D. de G. Griffith, opened the Theme Session and welcomed the participants. He stated that there would be no formal presentations as the main aim was to hear comments from the participants on two main themes: 1) the procedures for the Statutory Meetings, and 2) the structure of ICES, particularly the structure of the Subject\Area and Advisory Committees and how they interacted with the Working and Study Groups. The documents for the meeting were 1) the "Report of the mid-term meeting of the Consultative Committee" (Doc. Gen:4), 2) the "Report of the Bureau Working Group on Strategic Planning for Scientific Co-operation and Advice" (Doc. Gen:6), 3) "The ICES committee structure - discussion paper" (Doc. Gen:7) by Dr P. Malkki, and 4) "ICES in the future" by Dr J. Shepherd (uncoded paper).

Procedures for the Statutory Meetings

Comments were made by a wide range of participants, some who had attended Statutory Meetings over several decades and some who were attending for the first time. Several of those who had attended for many years cautioned that changes in the Statutory Meeting should be made very carefully, ensuring that they would provide an improvement for the Council. Conerning the suggestion that the business of a Committee should be separated from the consideration of scientific issues, several participants noted that such a separation could be very difficult, since many scientific discussions could arise from the handling of Committee business and *vice versa*. It was also pointed out that the handling of business in a Committee helped young scientists grow in the ICES system, which was very important. Other participants felt, however, that the scientific sessions should be separated from the business sessions.

In terms of the opportunities afforded to young scientists at the Statutory Meeting, one participant commented that the atmosphere of the Meeting discouraged active participation by young scientists.

The Chairman provided an overview of the responses to the questionnaire concerning the Statutory Meeting that all participants had received at the beginning of the Meeting. Thus far, 54 responses to the questionnaire had been received, i.e., roughly 10% of the participants had responded. They covered all age groups and scientific disciplines represented at the Meeting, and most had a good understanding of the ICES system. Most had indicated that they were stimulated by the Meeting, but approximately 90% felt that some change would be beneficial. The main thrust of the comments encouraged better quality of the papers, more theme sessions, more time for presentation of papers and discussion, fewer Committee sessions, and less administrative work.

Many participants felt that the lack of time for presentation of papers and discussion was the most critical problem of the Statutory Meeting. It was pointed out that some Committees had successfully coped with this problem by grouping papers and discussing them in a block. Another suggestion was that more papers should be presented as posters, but several participants felt that this was not an adequate alternative, as it was important to have an open discussion of the papers, which was not possible for posters. It was proposed, however, that papers could be prepared to accompany posters. It was noted that, while other scientific conferences had successfully conducted large poster sessions, ICES seemed to have had difficulty in launching good poster sessions.

A number of participants felt that Committee Chairmen should exercise discretion and allocate time according to the merit of the papers, including perhaps selecting only certain papers for presentation. This proposal was generally accepted, but it was noted that the papers must be available in adequate time prior to the Meeting to allow the Chairmen to review them and plan the Committee sessions. The deadlines established by the Council should be more strictly observed.

The issue of setting a limit on the number of papers submitted to the Statutory Meeting was considered. Approximately half of the participants in the Theme Session felt that there were too many papers, while the other half felt that the number was acceptable. Several strong objections were raised concerning limitations on the number of papers, citing that it may often be the papers of young scientists that would be dropped if there were restrictions. The general conclusion, however, was that no limit should be placed on the number of papers submitted to the Meeting, but that a limit should be placed on the number of papers that could be presented.

There was general opinion that Theme Sessions were very good and that the quality of the papers, their presentation, and the discussions were often of a higher quality than at Committee sessions. The larger amount of time allocated to Theme Session papers could play a role in this impression of better quality.

It was pointed out that there was a weakness in the format of the Statutory Meeting. A new format could have

the scientific portion conducted as a scientific conference, to ensure good presentations, and the business portion conducted by the Committee initially meeting with its members only, and later presenting the results of the business in open sessions.

Two specific suggestions were made on other related issues. One was a proposal that ICES establish a "Research Book" containing the logical conceptual framework of scientific issues covered by ICES, so that persons outside of ICES could read and understand the basis for the various scientific topics within ICES. This could be updated from time to time as the work progressed. The second specific proposal was to bring economics more into the fisheries work, so that ICES advice could be more effective in assisting managers as well as fishing industries. In this context, ICES should establish broader contacts with international associations of fisheries economists. It was further proposed that ICES hold a Theme Session on bioeconomics in the near future.

Committee Structure of ICES

Several proposals had been made in the documents for this Session concerning changes in the Subject/Area Committee structure of ICES. These included merging the Demersal Fish, Pelagic Fish, and Baltic Fish Committees into one Fish Ecology Committee and establishing a Committee for marine chemistry and chemical oceanography.

Discussion of the proposal to merge the three Fish Committees indicated little support, although the topic of fish ecology was considered to be important. Most participants contributing to the discussion felt that a cross-fertilization with other scientific disciplines, such as hydrography and plankton, would be more useful. It was felt that enhancing the role of the Theme Sessions was important in this context.

Concluding Remarks

The Convener noted that the following topics had been highlighted by the discussion:

- A conceptual framework for the Statutory Meeting would be valuable.
- The scientific quality of the papers should be improved.
- Background information should be included at the beginning of each paper presentation.
- More time was needed for a general discussion of scientific issues.
- Chairmen needed to discriminate between the number of papers submitted and the number to be presented.
- Issues regarding posters should be given further consideration.
- Advance mailing of large numbers of conference papers was an anachronism; hard-copy documentation of the originals could be reproduced at the conference venue.
- Possibilities needed to be created for a discussion of strategic issues.

The Convener stated that all suggestions would be considered for implementation to the greatest extent possible. He thanked all participants for their contributions.

DOCUMENTS

Gen:4 Ref. A+Del		Report of mid-term meeting of Consultative Committee, ICES Headquarters, 14-16 June 1993
Gen:6 Ref. A+Del		Report of the Bureau Working Group on Strategic Planning for Scientific Cooperation and Advice, Copenhagen, 17-20 June 1993
Gen:7	P. Mälkki	The ICES committee structure - discussion paper
Uncoded	J. Shepherd	ICES in the future

THEME SESSION ON IMPACT OF THE 1993 MAJOR INFLOW TO THE BALTIC SEA (V)

Convener: Mr H. Dahlin

Introduction

In accordance with the decision of the Programme Planning Group Meeting, 27-28 May 1993, the Theme Session on "Impact of the 1993 Major Inflow to the Baltic Sea" was held 23 September and was attended by about 100 participants.

Agenda and Presentation of Papers

Fourteen papers and one Working Group report had been allocated to the Theme Session. These were divided into five parts and presented in the following order:

a) Two retrospective papers gave a general description of identified major inflows during the last 96 years (Doc. C:52) and the influence of environmental conditions and spawning stock size on the year-class strength of the eastern Baltic cod during the last 40 years (Doc. J:22).

b) Two papers demonstrated the flow over the two sills to the Baltic Sea, the Drogden Sill (Doc. C:57) and the Darss Sill (Doc. C:51), and the short-term impacts in the Arkona Basin. The papers also discussed the volume of water and salt which entered the Baltic during January 1993.

c) Three papers reviewed measurements and showed the impact of the inflow in the area from the Bornholm Basin to the Eastern Gotland Basin until August 1993 (Docs. C:14, C:26, and C:58). The author of Doc. C:14 was not present and the paper was only read by title. Docs. C:26 was presented as a poster. An additional presentation of measurements in the Stolpe Channel and the Gdansk Basin was given by Dr J. Piechura (Poland) which furnished the same picture of the impact of the inflow as the other papers, however, in more detail.

d) Two paper were of relevance for the fish reproduction in the Baltic proper. Doc. J:21 showed experimental work on the survival of eggs and the hatching of larvae of cod at different oxygen levels. Doc. J:31 discussed the possible effects on fish reproduction due to the changed oceanographic conditions in the Baltic proper.

e) Two papers used numerical modelling to simulate the inflow. The model in Doc. C:48 was run with data from 1992-1993 and simulated the recent inflow, while the model in paper C:57 showed its capacity by using data from the 1951 inflow. This model would be used later for the 1993 inflow.

Discussion and Conclusions

Most of the presentations were descriptive and straight forward and did not raise any discussion.

However, there was a disagreement about the importance of the Sound and the Belts during an inflow. The estimations of the flow of water and salt through the Sound (Doc. C:58) in relation to the flow over the Darss Sill was questioned. The author admitted that the salinity of the inflowing water could be overestimated by about 1 psu, but this did not change the relationship enough to change the drawn conclusions. The main author of Doc. C:58 also remarked that the calculations by Wyrtki (1954) of the 1951 inflow, which give low values for the Sound, probably were wrong and ought to be recalculated.

It was agreed that this dispute should probably be resolved by more thorough calculations which would be possible when the whole data set from the inflow event was available.

In comments to Doc. J:31, it was suggested that the disappearance of the expected increase of cod larvae could depend on the competition between cod and sprat. One hypothesis was that the increased amounts of sprat, due to the reduction of cod, should feed on cod eggs and reduce the success of the spawning.

It was concluded that there still were uncertainties about the volume of the inflow and its impacts on the Baltic environment. This led to a discussion on the continuation of the work, and to the following proposals:

a) An inventory should be made of existing measurements with relevance to the inflow. Mr H. Dahlin (Sweden) would assume responsibility for this.

b) The data relevant to the 1993 inflow should be collected as soon as possible in a common data base available to those who supplied data. The ICES Oceanography Secretary would give advice on this. The present representatives from different Baltic institutes declared their intention to send data to such a data base.

c) A follow-up Theme Session should be held at the next Statutory Meeting.

d) ICES should be asked to approach the governments of the countries surrounding the Baltic Sea and explain the need for a more rapid way of obtaining permission for research vessels to work in the exclusive economic zones of other countries, especially during inflow events. Several measurements during 1993 could not be performed in time or had to be interrupted at national zone boundaries because of the routines for notification which were used today.

DOCUMENTS

C:14 Sess. V	A. Zezera and E. Zezera	Recent changes of salinity and its anomalies in the southeastern Baltic (1992-1993)
C:26 Sess. V **Poster**	A. Grelowski and T. Wojewodzki	Distribution of highly saline waters observed in April 1993 after the inflow to the southern Baltic
C:48 Sess. V	E. Kleine	Numerical simulation of the recent (1993) major Baltic inflow
C:51 Sess. V	W. Matthäus *et al.*	The major Baltic inflow in January 1993
C:52 Sess. V	W. Matthäus	Major inflow of highly saline water into the Baltic Sea - a review
C:57 Sess. V	B. Håkansson *et al.*	The flow of water in the Sound during the Baltic major inflow event in January 1993
C:58 Sess. V	H. Dahlin *et al.*	The changes of hydrographic conditions in the Baltic proper due to the 1993 major inflow to the Baltic Sea
E:6 Sess. V		Report of the Working Group on the Baltic Marine Environment, Helsinki, Finland, 21-23 April 1993
J:21 Sess. V	U. Waller *et al.*	The survival of eggs and the hatching of larvae of cod (*Gadus morhua*) at different oxygen levels
J:22 Sess. V	M. Plikshs *et al.*	The influence of environmental conditions and spawning stock size on the year-class strength of the eastern Baltic cod
J:31 Sess. V	O. Bagge	Possible effects on fish reproduction due to changed oceanographic conditions in the Baltic proper

RESOLUTIONS ADOPTED AT THE 81ST STATUTORY MEETING

RESOLUTIONS INVOLVING PUBLICATIONS

C.Res.1993/

1:1 The "Guide to Premaxillae and Vertebrae of North Sea Fish" by Dr J. Watt (UK), Dr G.J. Pierce (UK) and Dr P.R. Boyle (UK) will be published in the *ICES Cooperative Research Report* series, subject to final review by the Chairman of the Demersal Fish and Pelagic Fish Committees. The estimated number of pages is 230.

1:2 The results of Stages 3a and 3b of the ICES/OSPARCOM Intercomparison Programme on the Analysis of Chlorobiphenyls in Marine Media (by Dr J. Boer *et al.*) will be published in the *ICES Cooperative Research Report* series. The estimated number of pages is 100.

1:3 The papers presented at the SKAGEX Workshop held in Lysekil, Sweden in 1992, edited by Mr L. Føyn (Norway), will be published as a set in the *ICES Cooperative Research Report* series, subject to final review by the Chairman of the Hydrography Committee. The estimated number of pages is 100.

1:4 A selection of the papers presented at Theme Session O on the "Dynamics of Upwelling in the ICES Area", edited by Dr E. Hagen (Germany) and Mr A. Jorge da Silva (Spain) will be published in the *ICES Cooperative Research Report* series, subject to final review by the Chairman of the Hydrography Committee. The estimated number of pages is 100.

RESOLUTIONS INVOLVING MEETINGS OF COMMITTEES, GROUPS, AND WORKSHOPS

CONSULTATIVE COMMITTEE

C.Res.1993/

2:1 The Consultative Committee (Chairman: Dr R.C.A. Bannister, UK) will meet at ICES Headquarters from 1-2 June 1994 at Council expense to:

a) approve, for the Bureau's consideration, a draft programme of sessions for the 1994 Statutory Meeting;

b) consider the following scientific and strategic matters related to improving the interdisciplinary role of the Council and improving the Statutory Meeting:

i) ongoing developments concerning the remit, goals, and issues to be handled by ACME;

ii) the Subject/Area Committee structure and the Working/Study Groups reporting to them or to ACME and ACFM;

iii) the development of Council policy on the handling of marine mammal issues within the ICES structure;

iv) the quantity and quality of Statutory Meeting papers;

v) improvements to the format and conduct of Statutory Meetings with a view to implementation at the 1994 Statutory Meeting;

vi) other topics as may be decided by the Committee.

2:2 An *Ad Hoc* Group on ICES Marine Mammal Policy will be established under the chairmanship of the Chairman of the Consultative Committee and including the Chairmen of ACFM, ACME, and the Marine Mammals Committee, Mr A. Maucorps (France), and Dr M.P. Sissenwine (USA) and will meet at ICES Headquarters for two days (prior to June 1994) at Council expense to:

a) develop a comprehensive policy on the handling of marine mammal issues within the ICES structure;

b) prepare an appropriate document to be considered at the 1994 mid-term meetings of the Consultative Committee and the Bureau.

2:3 The Study Group on Long-Finned Pilot Whales (Chairman: Prof. D. Butterworth,

2:3 ctd. South Africa) will work by correspondence during 1994, with a view to holding a meeting in 1995, to:

a) conduct an evaluation of the status of long-finned pilot whales in the North Atlantic (i.e., population size and trends, population dynamics parameters), including the importance of behavioural factors and accounting for multispecies interactions;

b) identify key information gaps and critical long-term information needs.

2:4 The Tenth ICES Dialogue Meeting on "Fisheries and Marine Environmental Problems in the Bay of Biscay and Iberian Region" will be held in 1995 or 1996 and a planning meeting will be held in Vigo, Spain for two days in March-April 1994 under the chairmanship of the ICES Fishery Secretary to:

a) establish a Steering Group;

b) discuss the format and subject area of the Dialogue Meeting;

c) discuss the logistic requirements for the Dialogue Meeting.

The planning meeting will be attended by the Chairmen of ACFM and ACME, national representatives from France, Portugal, and Spain and the ICES Fishery Secretary; a representative of the Commission of the EC will be invited to attend. The report of the planning meeting will be submitted to the 1994 mid-term meeting of the Bureau.

2:5 The Working Group on Cod and Climate Change (Chairman: Dr K. Brander, UK) will a) review by correspondence the conclusions of the Symposium on "Cod and Climate Change" and b) continue its work in 1994 in the following ICES/GLOBEC Workshops:

2:5:1 A Cod and Climate Data Base Workshop will be held in 1994 at a place and time to be determined under the chairmanship of Dr S. Murawski (USA) to:

a) review existing large-scale studies of the relationships between cod, copepods, and climate variables;

b) review appropriate methods for time-series analysis and geostatistical techniques;

c) consider the need for and issues related to the establishment of a centralized data base;

d) review existing data sets in order to plan new data acquisition.

2:5:2 A Cod and Climate Backward-Facing Workshop will be held shortly after the Statutory Meeting in September/October 1994 in St. John's, Newfoundland, Canada under the chairmanship of Dr R.R. Dickson (UK) and Dr K.T. Frank (Canada) to assemble evidence for assessing climatic impacts on cod stocks, including:

a) climate at West Greenland during the last cod period 1820-1940;

b) the 1880s migration of cod from Labrador to New England during the tilefish kill;

c) large-scale, long-term evidence of inter-stock exchange in the North American eastern seaboard (tagging, genetics, meristics);

d) 19th century cold periods in the Barents Sea and year-class strength;

e) CPR redfish records for the Irminger Sea;

f) catch history in northern Labrador and Baffin Island (NAFO Divisions 2GH and 0B) as evidence of inter-stock exchange;

g) the long-term history of the cold intermediate layer on the Canadian banks and their relation to large-scale climate;

h) evidence for historic shifts in cod spawning.

2:5:3 A Cod and Climate "Aggregation" Workshop will be held in Charlottenlund, Denmark from 22-24 August 1994 under the co-chairmanship of Dr B. Mackenzie (Denmark) and Dr M. St. John (Denmark) to consider whether and how the intermediate-scale processes listed below govern cod stock fluctuations in all regions of the North Atlantic:

a) physical mechanisms resulting in enhanced nutrient flux;

C.Res.1993/

2:5:3 ctd.

b) the effects of physical processes on food webs and hence on transfer efficiencies to all stages of cod;

c) influence of turbulence on larval and 0-group feeding ecology;

d) distribution of larvae, juveniles, and their prey due to migratory patterns in a variable-flow field;

e) implications of intermediate-scale physical processes for "match/mismatch" of larvae and their prey;

f) linkage of these processes to enhanced growth, condition, and survival of all life stages of cod.

ADVISORY COMMITTEE ON FISHERY MANAGEMENT

C.Res.1993/

2:6 The Advisory Committee on Fishery Management (Chairman: Mr E. Kirkegaard, Denmark) will meet at ICES Headquarters from 17-25 May and from 25 October - 2 November 1994 at Council expense.

The Committee will meet jointly with the Advisory Committee on the Marine Environment in Charlottenlund, Denmark on 24 May 1994 to consider, among other things, the reports of the Working Group on Ecosystem Effects of Fishing Activities and the Study Group on Seals and Small Cetaceans in European Seas and issues concerning fish diseases and their impact on stocks.

2:6:1 The Arctic Fisheries Working Group (Chairman: Mr K. Sunnanå, Norway) will meet at ICES Headquarters from 23 August - 1 September 1994 to :

a) assess the status of and provide catch options for 1995 for the stocks of cod, haddock, saithe, redfish, and Greenland halibut in Sub-areas I and II;

b) provide estimates of the stock size of North-East Arctic cod using a range of natural mortalities;

c) assess, as far as possible, the impact of predators on the stocks under item a), including cannibalism, and provide support to other Working Groups with regard to the predatory impact of the stocks in item a), in particular on Barents Sea capelin and Norwegian spring-spawning herring.

2:6:2 The Atlanto-Scandian Herring and Capelin Working Group (Chairman: Mr H. í Jákupsstovu, Faroe Islands) will meet at ICES Headquarters from 17-21 October 1994 to:

a) assess the status of and provide catch options for 1995 and 1996 for the Norwegian spring-spawning and Icelandic summer-spawning herring stocks;

b) provide any new information on the present spatial and temporal distribution of Norwegian spring-spawning herring;

c) assess the status of capelin in Sub-areas V and XIV and provide catch options for the winter 1994/1995 and summer/autumn 1995 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) for the winter 1994/1995 and summer/autumn 1995 seasons;

e) consider further how biological interactions can be incorporated into the assessments of capelin, herring, and cod stocks.

2:6:3 The Baltic Salmon and Trout Assessment Working Group (Chairman: Mr C. Eriksson, Sweden) will meet at ICES Headquarters from 6-13 April 1994 to:

a) assess the status of Baltic salmon stocks and provide catch options (in numbers of fish) for 1995 within safe biological limits which have been defined to "safeguard the wild stocks";

b) compile information on the status of wild Baltic salmon stocks and describe the extent to which wild salmon are exploited in the various fisheries;

2:6:3 ctd.

c) compile and evaluate information on the variation in growth of Baltic salmon with time and area, and consider the effects of changes in food levels;

d) continue to compile information on the status of sea trout and rainbow trout stocks in the Baltic;

e) evaluate the available information on mortality caused by M-74 in Baltic salmon stocks and the relationship between M-74 and subsequent parr and smolt abundance;

f) identify and evaluate regulatory approaches for controlling fishing mortality on Baltic salmon stocks designed to ensure adequate escapement of wild salmon, particularly into northern rivers in the Gulf of Bothnia;

g) review the available information on incidental catches and other sources of man-induced mortality of Baltic ringed seals in the salmon drift-net fishery, including numbers of seals killed and seasonal variation in the mortality.

2:6:4 A Sub-Group of the Baltic Salmon and Trout Assessment Working Group consisting of assessment experts from within the Working Group will meet at ICES Headquarters from 31 January - 2 February 1994 under the chairmanship of Dr K. Friedland (USA), who will attend at Council expense, to:

a) evaluate the model and model parameters used in the assessment and prediction of Baltic salmon;

b) continue the development of models to describe the fishing interactions and stock dynamics in order to estimate the effects of management measures (including the possibility of using season- and area-disaggregated measures) on the wild and reared stocks separately.

2:6:5 The Blue Whiting Assessment Working Group (Chairman: Mr J.A. Jacobsen, Faroe Islands) will meet in Vigo, Spain from 8-14 September 1994 to:

a) assess the status of and provide catch options for 1995 and 1996 for the blue whiting stocks;

b) update the information on the spatial and temporal distribution of the stock and of the fisheries on blue whiting.

2:6:6 The Herring Assessment Working Group for the Area South of 62°N (Chairman: Mr O. Hagström, Sweden) will meet at ICES Headquarters from 21-31 March 1994 to:

a) assess the status of and provide catch options (by fleet where possible) for 1995 and, where appropriate, 1996 for the North Sea autumn-spawning herring stock in Division IIIa, Sub-area IV, and Division VIId (separately, if possible, for Divisions IVc and VIId), the herring stocks in Division VIa and Sub-area VII, and, in collaboration with appropriate members of the Working Group on the Assessment of Pelagic Stocks in the Baltic, the stock of spring-spawning herring in Division IIIa and Sub-divisions 22-24;

b) provide catch options by fleet for the fisheries in Division IIIa, the North Sea, and Sub-divisions 22-24 that exploit the stocks of North Sea autumn-spawning herring and Division IIIa and Sub-divisions 22-24 spring-spawning herring using consistent assumptions for both stocks;

c) assess the status of the sprat stocks in Sub-area IV and Divisions IIIa and VIId,e;

d) provide the data requested by the Multispecies Assessment Working Group (quarterly catches and mean weights at age in the catch and stock for 1993 by sub-division of the North Sea for species in the multispecies model that are assessed by this Working Group).

2:6:7 The North-Western Working Group (Chairman: Dr S.A. Schopka, Iceland) will meet at ICES Headquarters from 2-10 May 1994 to:

a) assess the status of and provide catch options for 1995 for the combined Greenland/Icelandic cod stock;

b) assess the status of and provide catch options for 1995 and 1996 for the stocks of redfish in Sub-areas V, VI, XII, and XIV, Greenland halibut in Sub-areas V and XIV, saithe in Division Va and Division Vb, and cod and haddock in Division Vb;

2:6:7 ctd.

c) for those stocks and/or fisheries where data permit, provide the information required for ACFM to give advice or guidance on:

i) medium-term management objectives (in terms of spawning stock biomass and mortality rates) and options;

ii) the potential for multispecies and multiannual catch options;.

d) provide a detailed description of the various fleets (i.e., gears, seasons, main fishing grounds, and main species) and, where possible, provide the landings, selection parameters, and annual mortalities by fleet and species;

e) update the information provided in 1993 on the stock identity, migration, spawning areas and state of exploitation of the oceanic stock of *Sebastes mentella*, paying particular attention to the question of whether the assessment based on acoustic and catch data represents the total exploitable stock taking into account the latest survey data;

f) provide estimates of the stock size of Icelandic cod using a range of natural mortalities.

2:6:8 The Working Group on the Assessment of Demersal Stocks in the Baltic (Chairman: Mr S. Munch-Petersen, Denmark) will meet at ICES Headquarters from 13-21 April 1994 to:

a) assess the status of and provide catch options for 1995 for the cod stocks in the Baltic (including Sub-division 23);

b) assess the status of and provide catch options for 1995 for the cod stock in the Kattegat and sole stocks in Division IIIa;

c) update the description of the fisheries for demersal stocks in the Baltic Sea which was provided in 1992, including an evaluation of the impacts of the gill-net fishery;

d) provide information on the state of flatfish stocks in the Baltic and, if possible, carry out an assessment of the flounder stocks;

e) provide the information requested by the Working Group on Multispecies Assessment of Baltic Fish;

f) identify the available data to quantify the pattern and rate of migration of cod between the Kattegat and different parts of the Baltic;

g) review the 1993 report of the Working Group on Multispecies Assessment of Baltic Fish;

h) prepare for the transfer of the Group's work to an area-based Working Group;

i) recompile data on catches in tonnes, catches in numbers at age, and mean weights at age by quarter and sub-division for cod in order to resolve present inconsistencies between data sets used in single species and multispecies assessments.

2:6:9 The Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (Chairman: Dr R.M. Cook, UK) will meet at ICES Headquarters from 6-14 October 1994 to:

a) assess the status of and provide catch options for 1995 for the stocks of cod, haddock, whiting, saithe, sole, and plaice in Sub-area IV, Division IIIa (excluding sole in Division IIIa and cod in the Kattegat), and Division VIId (excluding haddock and saithe), taking into account as far as possible the technical interactions among the stocks due to the mixed-species fisheries;

b) for the North Sea roundfish and flatfish stocks and fisheries, provide the information required for ACFM to give advice or guidance on:

i) medium-term management objectives (in terms of spawning stock biomass and mortality rates) and options;

ii) the appropriateness of controls on catch (or landings) and fishing effort;

iii) the potential for multispecies and multi-annual catch options.

c) provide the data requested by the Multispecies Assessment Working Group (quarterly catches and mean weights at age in the catch and stock for 1993 by sub-divi-

2:6:9 ctd. sion of the North Sea for all species in the multispecies model that are assessed by this Working Group).

2:6:10 The Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine, and Anchovy (Chairman: Mr A. Eltink, Netherlands) will meet at ICES Headquarters from 21 June - 1 July 1994 to:

a) assess the status of and, if necessary, provide catch options for 1995 for the stocks of mackerel and horse mackerel (defining stocks as appropriate);

b) assess the status of and provide catch options for 1995 for the sardine stock in Divisions VIIIc and IXa, and the anchovy stocks in Sub-area VIII and Division IXa;

c) provide data requested by the Multispecies Assessment Working Group (quarterly catches and mean weights at age in the catch and stock for 1993 by sub-division of the North Sea for those species in the multispecies model that are assessed by this Working Group).

2:6:11 The Working Group on the Assessment of Northern Shelf Demersal Stocks (Chairman: Mr P.A. Kunzlik, UK) will meet at ICES Headquarters from 14-23 June 1994 to:

a) assess the status of and provide catch options for 1994 for the stocks of cod, haddock, whiting, saithe, megrim, and anglerfish in Sub-area VI, and cod, whiting, plaice, and sole in Division VIIa;

b) continue to compile the data necessary for assessing the stocks of blue ling, ling, and tusk in Sub-areas V, VI, and XIV and identify outstanding data requirements.

2:6:12 The Working Group on the Assessment of Norway Pout and Sandeel (Chairman: Mr D.W. Skagen, Norway) will meet at ICES Headquarters from 31 August - 6 September 1994 to:

a) quantify the species composition of bycatches taken in the fisheries for Norway pout and sandeel in the North Sea and adjacent waters;

b) assess the status of Norway pout and sandeel stocks in Sub-area IV and Divisions IIIa and VIa and advise on the need for any management measures;

c) provide the data requested by the Multispecies Assessment Working Group (quarterly catches and mean weights at age in the catch and stock for 1993 by sub-division of the North Sea for those species in the multispecies model that are assessed by this Working Group).

2:6:13 The Working Group on the Assessment of Pelagic Stocks in the Baltic (Chairman: Dr J. Horbowy, Poland) will meet at ICES Headquarters from 13-21 April 1994 to:

a) review the assessment and forecasts of the herring in Sub-divisions 22-24 and Division IIIa conducted by the Herring Assessment Working Group for the Area South of 62°N;

b) assess the status of and provide catch options for 1995 for the stocks of herring in Sub-divisions 25-32 and sprat in Sub-divisions 22-32;

c) provide the information requested by the Working Group on Multispecies Assessment of Baltic Fish;

d) review the 1993 report of the Working Group on Multispecies Assessment of Baltic Fish;

e) describe the fisheries for pelagic stocks in the Baltic Sea;

f) prepare for the transfer of the Group's work to an area-based Working Group.

g) recompile data on catches in tonnes, catches in numbers at age and mean weights at age by quarter and sub-division for herring and sprat in order to resolve present inconsistencies between data sets used in single species and multispecies assessments.

2:6:14 The Working Group on the Assessment of Southern Shelf Demersal Stocks (Chairman: Mr B. Mesnil, France) will meet at ICES Headquarters from 6-15 September 1994 to:

a) assess the status of and provide catch options for 1995 and, if appropriate, 1996

2:6:14 ctd. for stocks of cod, whiting, plaice, and sole in Divisions VIIe-k, and sole in Sub-area VIII;

b) provide information on the state of exploitation and, where possible, provide catch and management options for hake stocks in Sub-areas III, IV, VI, VII, VIII, and IX and for stocks of anglerfish and megrim in Sub-areas VII, VIII, and IX;

c) for the hake stocks and fisheries, provide the information required for ACFM to give advice or guidance on:

i) medium-term management objectives (in terms of spawning stock biomass and mortality rates) and options;

ii) the appropriateness of controls on catch (or landings) and fishing effort;

iii) the potential for multispecies and multiannual catch options.

d) if possible, evaluate options for technical measures appropriate to the fisheries, taking into account technical interactions between the component fleets and species.

2:6:15 The Working Group on Long-Term Management Measures (Chairman: Mr T.K. Stokes, UK) will meet in Miami, FL, USA from 18-27 January 1994 to:

a) develop further strategies for explicitly including spatial effects in multi-species/multifleet assessment models in different fisheries systems, taking account, as appropriate, of:

i) methods for the incorporation of migration and dispersal rates for use in spatially disaggregated models and advise how such data may be obtained from available data;

ii) effort reallocation models including socio-economic aspects;

iii) methods for inferring discard rates from existing data;

b) develop methods for evaluating the performance of long-term management strategies in different fisheries systems, with emphasis on the use of biological reference points in relation to uncertainty, advise how future work on this subject should be structured within ICES, and suggest how results can be incorporated in ACFM advice;

c) in relation to the transfer of the STCF data base, discuss hardware and software facilities, maintenance requirements, checking procedures, error corrections, updating procedures, extraction procedures, confidentiality protocol, access rights, etc.;

d) define focus areas for further development of multispecies/multifleet assessment models for future work by the Working Group;

e) consider how collaboration with the Working Group on Fishing Technology and Fish Behaviour might be enhanced, especially with regard to gear selectivity, modelling, and fleet/métier definitions;

f) advise on the data and tools required to address questions associated with the "plaice box" in the North Sea.

The Group will make its report available to the Working Group on Fishing Technology and Fish Behaviour. The meeting should be attended by gear and fish capture experts.

2:6:16 The Working Group on Methods of Fish Stock Assessment (Chairman: Dr G. Stefánsson, Iceland) will meet at ICES Headquarters in February 1995 to:

a) develop alternative assessment methods based on limited data and for those stocks where there is uncertainty in age determination;

b) consider the utility of methods designed to estimate catch-at-age directly from catch-at-length data;

c) review the report of the Workshop on Sampling Strategies for Age and Maturity Data.

2:6:17 The Working Group on Multispecies Assessment of Baltic Fish (Chairman: Mr B. Sjöstrand, Sweden) will meet at ICES Headquarters in February 1995 to continue to develop the MSVPAs for Sub-divisions 22-24 and 25-

2:6:17 ctd. 32 taking into account the comments from the Working Group on the Assessment of Pelagic Stocks in the Baltic and the Working Group on the Assessment of Demersal Stocks in the Baltic, and the report of the Multispecies Assessment Working Group.

2:6:18 The Working Group on *Nephrops* and *Pandalus* Stocks (Chairman: Mr N. Bailey, UK) will meet in Lisbon, Portugal from 1-9 March 1994 to:

a) review and update available fishery, sampling, and biological data for *Nephrops* assessments, reporting in particular on any improvements in effort indices;

b) continue methodological development in *Nephrops* assessment taking note of progress made by the Study Group on Life Histories and Assessment Methods of *Nephrops* Stocks;

c) assess the status of those stocks of *Nephrops* in the ICES area where new methodology or new data justify a new assessment, revising catch options only where necessary;

d) assess the status of stocks of *Pandalus borealis* in the North Sea, Skagerrak, and Kattegat, incorporating any relevant new information arising from the Study Group on Life Histories and Assessment Methods of *Pandalus* Stocks in the North Atlantic.

2:6:19 The Working Group on North Atlantic Salmon (Chairman: Mr E.C.E. Potter, UK) will meet in Reykjavik, Iceland from 6-15 April 1994 to:

a) with respect to Atlantic salmon in each Commission area, where relevant:

i) describe the events of the 1993 fisheries with respect to catches (including unreported catches), gear, effort, composition and origin of the catch (including escapees and sea-ranched fish), and rates of exploitation;

ii) describe the status of the stocks occurring in the Commission area and, where possible, evaluate escapement against targets;

iii) specify data deficiencies and research needs;

b) evaluate the following management measures on the stocks and fisheries occurring in the respective Commission areas:

i) quota management measures and closures implemented after 1991 in the Canadian commercial salmon fisheries;

ii) the suspension of commercial fishing activity at the Faroes;

c) with respect to the fishery in the West Greenland Commission area:

i) continue the development of the model used in providing advice on catch quotas in relation to stock abundance;

ii) estimate the pre-fishery abundance of non-maturing 1SW salmon at the time of the fishery;

iii) provide catch options with an assessment of risks relative to the management objective of achieving various levels of target spawning escapement;

iv) describe which stocks make the greatest numerical contributions of salmon to the fishery;

v) evaluate the relationship between spawning escapement and subsequent prefishery abundance;

vi) provide a review of the data requirements and sampling programme necessary to provide advice on the available harvest of North American and European salmon at West Greenland;

d) evaluate the abundance of fish farm escapees and sea-ranched fish in fisheries and rivers;

e) evaluate grilsification mechanisms and assess the impact that grilsification may have on stock abundance and future spawning requirements;

f) evaluate indications of recruitment overfishing occurring on Atlantic salmon populations;

2:6:19 ctd.

g) evaluate the prospects of developing predictive models of annual migration and distribution of Atlantic salmon stock complexes;

h) evaluate the results of the research programme at the Faroes;

i) with respect to Atlantic salmon in the NASCO area, provide a compilation of microtag, finclip and external tag releases by ICES Member Countries in 1993.

2:6:20 A Study Group on the Biology and Assessment of Deep-Sea Fisheries Resources will be established under the chairmanship of Mr B. Jones (UK) and will meet at ICES Headquarters from 24-30 August 1994 to:

a) describe the fisheries for deep-water species [e.g., orange roughy, anglerfish, grenadiers, scabbard fish, rabbit fish (Chimaerids), forkbeards, sharks, Moridae) in the ICES area, and summarize all available information on catches and fishing effort by species, fleets, and gear;

b) report on the existing biological data for the deep-water species, and describe the biology of these stocks;

c) advise on additions to the list of species for which national catch data are required;

d) report on possible methods of assessment for these stocks, provide an inventory of the data available for assessment purposes, and identify shortcomings and data requirements;

e) assess the need for future international collaborative research activity and data collection programs on the biology and assessment of deep-water stocks in the ICES area and recommend appropriate plans;

f) identify species or stocks, if any, which may already be subject to excessive or unsustainable exploitation and suggest appropriate management actions.

2:6:21 A Study Group on the North Sea "Plaice Box" will be established under the chairmanship of Dr R. Millner (UK) and will meet in Charlottenlund, Denmark from 12-15 April 1994 to:

a) investigate appropriate modifications to the "plaice box" as defined in EEC Regulation No. 3094/86, Article 9, Paragraph 3;

b) quantify the expected short- and long-term effects of such modifications on both yield and biomass for plaice and all other relevant species;

c) identify possible additional regulations associated with the "plaice box".

2:6:22 The Working Group on Ecosystem Effects of Fishing Activities (Chairman: Mr H. Gislason, Denmark) will meet at ICES Headquarters from 20-27 April 1994 to:

a) analyze existing data on discards and offal to study temporal and spatial variations in the amounts produced by different fisheries and their utilization by, and effects on, different components of the system;

b) evaluate methods of assessing impacts of groundfish fisheries on the benthic infauna and epifauna with particular reference to P/B-related approaches;

c) analyze existing survey data in terms of appropriate summary parameters for species assemblages, with a view to initiating a study of biodiversity and changes in community structure;

d) consider the attributes that would be appropriate to define indicator species for the evaluation of long-term impacts of fishing in order to initiate a review of information on a variety of marine species that meet these attributes;

e) develop a design and planning framework for establishing areas of appropriate size to be closed to all fishing in order to monitor the response of benthic communities in heavily fished areas and plan monitoring activities and process studies to help understand the impacts of fisheries;

f) report to ACFM and ACME.

ADVISORY COMMITTEE ON THE MARINE ENVIRONMENT

C.Res.1993/

2:7 The Advisory Committee on the Marine Environment (Chairman: Dr K. Richardson, Denmark) will meet at ICES Headquarters from 25-31 May 1994 (in Charlottenlund, Denmark on 25 May), with participation by the Chairmen of the Statistics and Marine Mammals Committees, at Council expense to:

a) handle specific requests for advice from ICES Member Countries and regulatory commissions;

b) provide advice relevant to the revision of monitoring programmes coordinated by regional pollution regulatory commissions and Member Countries and review the topic of monitoring strategies and programme design on the basis of materials produced intersessionally by relevant Working Groups and ACME members;

c) review and assess progress in, and the scope for, modelling activities relevant to ACME responsibilities in environmental management;

d) review the status of work on ecological quality criteria and objectives, and prepare proposals for the coordination of relevant work within ICES.

The Committee will meet jointly with the Advisory Committee on Fishery Management in Charlottenlund, Denmark on 24 May 1994 to:

a) review progress in the work on the Cod and Climate Change programme;

b) review progress in the studies of ecosystem effects of fishing activities;

c) review issues concerning environmental impacts on marine mammals, including fisheries by-catches;

d) review issues concerning fish diseases and their impact on stocks;

e) discuss any other issues of common concern.

2:7:1 The Marine Chemistry Working Group (Chairman: Dr W. Cofino, Netherlands) will meet in Brest, France from 7-12 February 1994 to:

a) report on the results of the Fifth Intercomparison Exercise on the Analysis of Nutrients in Sea Water and report on the implications of these results for laboratories reporting data under Oslo and Paris Commission programmes;

b) report on the results of step 4 of the intercomparison programme on the analysis of CBs in marine media;

c) review the results of lipid determinations in step 4 of the intercomparison programme on the analysis of CBs with a view to determining the need for conducting an intercomparison exercise on lipid determinations;

d) prepare guidelines on the analysis of CBs in sediments;

e) report on the results of the investigations on trace metals in estuaries;

f) provide, for the contaminants currently monitored under the JMP, information on the level of comparability achieved among participating laboratories in the most recent relevant intercomparison exercise;

g) report on the results of the study on the relationship between trace metal concentrations and lipid content in biological tissues;

h) report on progress in the intercomparison programme on non-*ortho* CBs in fish oil;

i) report on progress in the project investigating similarities in patterns of CBs in marine species;

j) report on progress in the project investigating differences in CB patterns between different species of marine mammals;

k) consider review notes on monocyclic hydrocarbons, chlorinated alkanes, 4,4′-dichlorobenzidine, natural toxins, polychlorinated camphenes, and new order pesticides with a view to preparing draft advice concerning these substances in the marine environment.

A representative of IOC will be invited to attend.

2:7:2 The Working Group on Marine Sediments in Relation to Pollution (Chairman: Dr S. Rowlatt, UK) will meet in Nantes, France from 23-26 March 1994 to:

a) evaluate and report on the latest developments in methods for the normalization of both inorganic elements and organic compounds (particular attention should be paid to the applicability of normalization methods over wide geographical areas and a range of sediment types);

b) report on phase 3 of the Intercomparison Exercise on the Analysis of Trace Metals in Suspended Particulate Matter and on the role of suspended particulate matter in future monitoring programmes;

c) review MCWG advice on measuring CBs in sediments and amend the sediment monitoring guidelines accordingly;

d) evaluate and report on the relative effectiveness of instrumental and wet chemical methods for the determination of total organic carbon;

e) evaluate and report on the relative effectiveness of wet and dry sieving techniques for the determination of grain size distribution and the separation of grain size fractions for chemical analysis (possible contamination of samples during sieving and the loss of contaminants, especially organic compounds, during sieving should be reported);

f) assess variations in the mineralogy of shelf sediments in the ICES area and report on their relevance with respect to normalization techniques (sieving and geochemical);

g) assess and report on the availability of suitable certified reference materials for organic and inorganic contaminants in marine and coastal sediments;

h) review the results of the application of the geostatistical technique of kriging to data sets on the spatial distribution of contaminants in sediments with a view to providing advice on sampling;

i) review progress in and the results of the next phase of the CB intercomparison exercise coordinated by MCWG;

j) review the progress of national and international programmes on 'new' organic contaminants in sediments;

k) review the proposal (to be prepared by a Steering Group chaired by Dr A. Stebbing - C.Res.1993/2:7:8) for an integrated study to examine the processes of pollutant transfer and effects on biota and provide input to the WGBEC for the development of a final proposal.

2:7:3 The Working Group on Biological Effects of Contaminants (Chairman: Dr R. Stagg, UK) will meet in Nantes, France from 23-25 March 1994 to:

a) review the objectives of the Working Group and prepare a work plan for the next three to five years;

b) review the progress in and results of the intercomparison exercise on Scope-For-Growth measurements in bivalve molluscs;

c) review the proposal (to be prepared by a Steering Group chaired by Dr A. Stebbing - C.Res.1993/2:7:8) for an integrated study to examine processes of pollutant transfer and effects on biota and, on the basis of this report and comments by the WGMS, develop a proposal for ACME;

d) review and report on new developments in biological effects monitoring, taking into account information submitted to the Statutory Meeting;

e) evaluate the potential of methods using molecular and cellular probes for use in biological effects measurements and possibilities for their inclusion in biological effects monitoring.

A representative of IOC will be invited to attend.

2:7:4 A joint session of the Working Group on Marine Sediments in Relation to Pollution (WGMS) and the Working Group on Biological Effects of Contaminants (WGBEC) will be held under the chairmanship of Dr I. Davies (UK) in Nantes, France from 21-22 March

2:7:4 ctd. 1994 immediately prior to the meetings of the two Groups to:

a) provide an overview of reports on the assessment of the availability of contaminants in sediments;

b) review and evaluate experimental approaches for assessing the availability of contaminants in sediments;

c) evaluate the use of biological measures in current sediment monitoring and assessment programmes;

d) report on opportunities for the utilization of biological and chemical information in the development of sediment quality standards.

2:7:5 The Working Group on Environmental Assessment and Monitoring Strategies (Chairman: Dr I. Davies, UK) will meet in Gdynia, Poland from 28 February - 4 March 1994 to:

a) comment on discussion papers to be prepared by individual ACME members on the objectives and design of monitoring programmes and provide views on these topics in preparation for a discussion on monitoring at the 1994 ACME meeting;

b) prepare guidelines for the evaluation of the effectiveness of monitoring programmes;

c) update the document on environmental modelling presented in the 1991 WGEAMS report, with a view to providing ACME with an assessment of progress in, and the scope for, modelling activities relevant to ACME responsibilities, paying particular attention to the coupling of physical and biological models and their application to the management of fisheries and marine environmental issues;

d) identify suitable additional organisms for monitoring the spatial distribution of contaminants in biota under the Joint Monitoring Programme, as requested by the Oslo and Paris Commissions;

e) report on progress in the development of geographical information systems (GIS) and other expert systems that are used to support monitoring, assessment, and the development of management advice, based among others on the outcome of Theme Session T on "Computers in Fishery Research".

2:7:6 The Working Group on Statistical Aspects of Environmental Monitoring (Chairman: Dr M. Nicholson, UK) will meet in St. John's, Newfoundland, Canada from 25-29 April 1994 to:

a) review and report on the results of a comparison of MANCOVA and ANCOVA analyses of a real data set;

b) review the recommendations of the Sub-Group meeting in early February 1994 to reconsider the programme to investigate temporal trends of contaminants in biota (Objective 3 of the Cooperative ICES Monitoring Studies Programme);

c) review and report on further progress in the presentation of statistical data in formats readily acceptable by non-statisticians;

d) review and report on further progress in the use of covariables in the expression of contaminant concentrations and reduction of residual variance;

e) consider the report being prepared by a French member on the comparison of statistical tools and means to relate bloom occurrences to other factors.

2:7:7 A small Sub-Group on Temporal Trend Monitoring Programme for Contaminants in Biota, with a core of five people (one member each from the ICES Secretariat, JMAP, WGSAEM, WGEAMS, and MCWG), will be nominated by and meet, at Council expense, under the chairmanship of Dr R. Fryer (UK) at ICES Headquarters from 14-18 February 1994 to reconsider the temporal monitoring programme for contaminants in biota (Objective 3 of the CMP). Specifically, the Sub-Group will reconsider the objectives of the programme and the constraints relating to sampling protocols, sample treatment, and analytical performance.

2:7:8 A Steering Group on Integrated Study of Processes of Pollutant Transfer and Effects on Biota (Chairman: Dr A. Stebbing, UK) consisting of members from the WGBEC, WGMS, and MCWG will undertake the following tasks as an intersessional activity:

2:7:8 ctd.

a) review the existing data describing processes of pollutant transfer and effects on biota in the North Sea, based among others on the results of the Bremerhaven Workshop on the Biological Effects of Contaminants in the North Sea;

b) consider relevant chemical and physical data (obtained either through ICES or by informal contacts) which may affect contaminant distribution on a seasonal basis;

c) taking the above information into account, prepare a proposal for an integrated study to examine processes of pollutant transfer and effects on biota, for consideration by the WGBEC and WGMS at their next meetings.

It is expected that at least the initial phases of this work will be carried out via correspondence.

2:7:9 A Study Group on Occurrence of M-74 in Fish Stocks will be established under the chairmanship of Mr S. Mellergaard (Denmark) and will meet at ICES Headquarters from 1-3 March 1994 to:

a) review the available information on M-74 and similar reproductive disturbances;

b) propose details of scientific studies to investigate the causes and mechanisms of these reproductive disturbances and their effects on reproduction/early life stages of fish;

c) prepare a report for the Baltic Salmon and Trout Assessment Working Group and the Working Group on Pathology and Diseases of Marine Organisms.

2:7:10 The Working Group on Introductions and Transfers of Marine Organisms (Chairman: Dr J.T. Carlton, USA) will meet in Mystic, Connecticut, USA from 20-22 April 1994 to:

a) report on the current status of fish, shellfish, algal, and other introductions in and between ICES Member Countries;

b) complete work on a proposed new *ICES Cooperative Research Report* on "A Code of Practice to Reduce the Risks of Adverse Effects Arising from the Introduction and Transfer of Marine Organisms: Guidelines and a Manual of Procedures";

c) prepare a review of 1994 and proposed 1995 activities relative to the prevention of the release of non-indigenous marine organisms (such as phytoplankton species causing harmful algal blooms, but including other algae, invertebrates, and fish) by ballast water and ballast sediments to and between ICES Member Countries, and identify areas where greater cooperation and communication could facilitate such prevention;

d) continue to develop guidelines to evaluate the ecological effects of the release of genetically modified organisms (GMOs) in marine environments, with the intent to incorporate such guidelines in the new *ICES Cooperative Research Report* on the "Code of Practice";

e) prepare a review in the form of detailed case histories, tracing the initiation, discussions, and subsequent developments, of major Working Group deliberations on introductions and transfers in order to provide an overview of the role of ICES in such deliberations and to provide guidance for those contemplating future introductions and transfers;

f) consider the progress on Working Group activities relative to cooperation with FAO on the development of a "User's Guide to the Code of Practice" in developing countries;

g) consider the summary report from France on the introduction of the Japanese kelp, *Undaria pinnatifida*, including ecological considerations and environmental impacts, to be provided in 1994 as specified in C. Res.1989/4:4;

h) consider a request from the State of New Jersey (USA) to evaluate the appropriateness and risk of the use of sterile triploid Japanese oysters *Crassostrea giga* in open field trials to evaluate MSX- and Dermo-Disease Resistance in such oysters;

i) prepare, if time permits, a condensed information booklet, apart from an *ICES Cooperative Research Report*, for general distribution to ICES Member Countries, and particularly to other groups involved

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2:7:10 ctd. in the introductions and transfers of marine species, on the background, activities, and interests of the Working Group, with a copy of the 1993 Code of Practice appended, to respond to increasing requests for information about ICES activities in this field;

j) commence, if time permits, a review of different models (risk assessments, decision pathways, and other systems) which have been developed for evaluating proposed and contemplated introductions and transfers;

k) report (prior to the 1994 ACME meeting) on the issues and problems associated with the ecological impact (including changes in genetic attributes) associated with introductions, transfers, and enhancements of marine organisms, with a view to giving future Council advice.

FISH CAPTURE COMMITTEE

C.Res.1993/

2:8 The Working Group on Fishing Technology and Fish Behaviour (Chairman: Dr S.J. Walsh, Canada) will meet in Montpellier, France from 25-26 April 1994 to:

a) consider and comment on the final version of the Manual on Recommended Methodology of Selectivity Experiments prepared by the Sub-Group on Selectivity Methods;

b) review available information on the characteristics of new netting and twines used in towed fishing gears which may have the property to change codend selectivity;

c) review the methods to measure the characteristics described in item b), particularly mesh size, and make proposals for future work;

d) consider the influence of natural behaviour (diurnal migration, feeding, etc.) on sampling variability;

e) consider and develop the conclusions of the Sub-Group on Survival Experiments;

f) consider and comment on the report of the Working Group on Long-Term Management Measures;

g) consider and comment on the report of the 1993 NAFO Symposium on "Gear Selectivity/Technical Interactions in Mixed Species Fisheries".

2:8:1 The Sub-Group on Selectivity Methods (Chairman: Mr D.A. Wileman, Denmark) will meet in Montpellier, France from 21-23 April 1994 to prepare a final version of the Manual on Recommended Methodology of Selectivity Experiments.

2:8:2 A Sub-Group on Methodology of Fish Survival Experiments will be established under the chairmanship of Mr G. Sangster (UK) and will meet in Montpellier, France from 22-23 April 1994 to:

a) review and evaluate data and techniques for survival studies;

b) make proposals for the future direction of research on survival studies.

The Sub-Group will report to the Working Group on Fish Technology and Fish Behaviour and to the Working Group on Ecosystem Effects of Fishing Activities.

2:9 The Working Group on Fisheries Acoustics Science and Technology (Chairman: Mr E.J. Simmonds, UK) will meet in Montpellier, France from 28-29 April 1994 to:

a) review the progress of the Study Groups on Target Strength Methodology and Research Vessel Noise Measurement;

b) consider the combination of information obtained from fishing samples and acoustic measurements in the estimation of abundance, with the aim of identifying the source and magnitude of errors.

2:10 A joint session of the Working Group on Fisheries Acoustics Science and Technology and the Working Group on Fishing Technology and Fish Behaviour will be held in Montpellier, France on 27 April 1994 under the chairmanship of Dr G.P. Arnold (UK) to:

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2:10 ctd.

a) consider techniques to describe and quantify the behaviour of fish and micronekton ahead of, and in the mouth of, trawl nets and plankton samplers, and to measure the related gear geometry;

b) consider the applications of acoustic methods of seabed classification to fisheries investigations, with special regard to calibration, ground-truthing, repeatability, analysis, and interpretation.

2:11 The Study Group on Target Strength Methodology (Chairman: Mr E. Ona, Norway) will meet in Montpellier, France from 25-26 April 1994 to discuss and edit the report on Methodology for Target Strength Measurements with special reference to *in situ* techniques for fish and micro-nekton.

The Group will report progress to the Working Group on Fisheries Acoustics Science and Technology.

2:12 The Study Group on Research Vessel Noise Measurement (Chairman: Mr R. Mitson, UK) will meet in Montpellier, France on 26 April 1994 to:

a) discuss and edit the report on the essential noise requirements for research vessels;

b) propose recommended procedures for the measurement of research vessel noise.

The Group will report progress to the Working Group on Fisheries Acoustics Science and Technology.

2:13 A Workshop on Hydroacoustic Instrumentation will be held in Cambridge, England, UK from 3-5 May 1994 under the chairmanship of Mr H.P. Knudsen (Norway) to discuss and collate information on:

a) selection of towing cables and fairing;

b) methods for towed body deployment;

c) underwater and inboard electrical and mechanical connections;

d) towed bodies;

e) practical aspects of calibration of towed bodies and hull mounted systems.

HYDROGRAPHY COMMITTEE

C.Res.1993/

2:14 The Working Group on Marine Data Management (Chairman: Dr L. Rickards, UK) will meet in Bergen, Norway from 21-23 April 1994 to:

a) assess the 1990 oceanographic data sent to ICES by each Member Country, identify problems, and suggest solutions;

b) review progress in the implementation of IOC's Global Oceanographic Data Archaeology and Rescue (GODAR) Project in each ICES Member Country;

c) report on experiences in exchanging ADCP and SeaSoar data between data centres/laboratories and ICES using the ICES guidelines;

d) critically review operational procedures for oceanographic data centres in ICES Member Countries;

e) consider the problems solved (and created) by the use of new technology and data bases in Member Countries.

A representative of IOC will be invited to attend.

2:15 The Working Group on Oceanic Hydrography (Chairman: Dr E. Buch, Denmark) will meet in Bergen, Norway from 18-20 April 1994 to:

a) assess the likely distribution of the radioactive contamination of the Nordic Seas arising from possible sources off northern Norway and Russia;

b) assess progress in the understanding of the role of climatic variability and long-term change on pan-Atlantic cod populations and prepare a report for consideration by ACME and ACFM;

c) update and review the results of Standard Sections and Stations, including relevant data from the ICES Data Bank;

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2:15 ctd.

d) review progress in the WOCE Hydrographic Programme and other oceanographic projects in the North Atlantic;

e) finalize the report on the ICES NANSEN Project;

f) provide input to the Working Group on Marine Data Management on matters related to the IOC/ICES GODAR Project;

g) assess and evaluate new instrumentation for the measurement of oceanic parameters;

h) evaluate proposals for standard names for North Atlantic water masses.

2:16 The Working Group on Shelf Seas Oceanography (Chairman: Dr H. Dahlin, Sweden) will meet in Vigo, Spain from 11-12 May 1994 to:

a) begin a compilation of estimates on physical/chemical fluxes particularly across the shelf seas/ocean and riverine/coastal interfaces;

b) assist the Working Group on Harmful Algal Bloom Dynamics;

c) assess the value of oxygen consumption rate measurements in stagnant Norwegian fjords as a tool for monitoring eutrophication trends in the North Sea;

d) review the role of coastal currents in transporting and distributing biological organisms (e.g., fish eggs/larvae, algae).

A joint session with the ICES/IOC Working Group on Harmful Algal Bloom Dynamics will be held from 9-10 May 1994 to consider item b).

STATISTICS COMMITTEE

C.Res.1993/

2:17 A Workshop on Sampling Strategies for Age and Maturity Data will be held at ICES Headquarters from 3-9 February 1994 under the chairmanship of Dr G. Stefánsson (Iceland) to:

a) evaluate sampling strategies for age and maturity data with various levels of stratification by length (including purely random sampling) and advise on their usefulness;

b) advise on how maturity-at-age data should be derived from length-stratified sample data;

c) advise on the usefulness of applying smoothing to age/length keys;

d) prepare guidelines for conducting age-reading workshops.

MARINE ENVIRONMENTAL QUALITY COMMITTEE

C.Res.1993/

2:18 The Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea (Chairman: Dr U. Harms, Germany) will meet in Charlottenlund, Denmark from 25-26 April 1994 Denmark to:

a) report on the results of the ICES/HELCOM Workshop on Quality Assurance of Chemical Analytical Procedures for the Baltic Monitoring Programme;

b) plan any follow-up activities to the Workshop.

2:19 The Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea (Chairman: Dr L. Hernroth, Sweden) will work by correspondence in 1994 to:

a) continue the coordination of the development of quality assurance procedures for biological measurements in the Baltic Sea;

b) prepare detailed plans for the conduct of two ICES/HELCOM quality assurance workshops, one on pelagic measurements and the other on benthic measurements.

2:20 The Steering Group for the Coordination of a Baseline Study on Contaminants in Baltic Sedi-

2:20 ctd. ments (Chairman: Dr M. Perttilä, Finland) will meet at ICES Headquarters on 26 April 1994 to:

a) review the implementation of the Baseline Study, in particular the analyses of the sediment samples taken;

b) consider and, if necessary, modify the data base for the Baseline Study and review data submission questions;

c) prepare a draft description of the structure and contents of the report on the results of the Baseline Study.

2:21 The Working Group on the Baltic Marine Environment (Chairman: Dr H.-P. Hansen, Germany) will meet in Charlottenlund, Denmark from 27-29 April 1994 to:

a) develop a plan for the coordination of investigations and research projects planned for the Baltic Sea area;

b) develop a plan specifically for the coordination of investigations of coastal zone/open sea fluxes in the Baltic Sea;

c) report on progress in quality assurance and intercomparison/intercalibration of biological and chemical determinands;

d) complete the organization of the Baltic Hot Line Network;

e) review and assess Hot Line reports and other reported environmental events in the Baltic Sea;

f) assess the physical, chemical, and biological effects of the 1993 salt water inflow to the Baltic Sea;

g) review progress in the Baltic Sediment Baseline Study;

h) review the report of the Steering Group on Fisheries/Environmental Management Objectives and Supporting Research Programmes in the Baltic Sea.

2:22 The Working Group on the Effects of Extraction of Marine Sediments on Fisheries (Chairman: Dr S.J. de Groot, Netherlands) will meet in Keyworth, Nottingham, England, UK from 3-6 May 1994 to:

a) consider further the content of the environmental impact assessments which, according to the "Code of Practice for the Commercial Exploitation of Marine Minerals", may have to be carried out prior to the extraction of such deposits, with a view to producing guidelines for consideration at the 1994 ACME meeting;

b) review the results of the environmental impact assessments related to marine aggregate extraction operations;

c) consider standards for marine geological surveying and sampling;

d) review developments in legal and administrative frameworks and procedures in accordance with *ICES Cooperative Research Report* No. 182;

e) review the status of marine aggregate extraction activities in ICES Member Countries and related environmental research;

f) compile and present marine extraction and dredging statistics for the period 1983-1993 including comparison with published statistics for capital and maintenance dredging;

g) review the development of seabed resource mapping in ICES Member Countries;

h) examine the scope for coordination of and correlation between geological and biological mapping.

2:23 The Study Group on Environmental Modelling of the Baltic Sea (Chairman: Dr F. Wulff, Sweden) will work by correspondence in 1994 to:

a) determine the parameters to be included in models that could support the work on coastal zone/open sea flux studies;

b) review existing environmental models of the Baltic Sea or its sub-regions and categorize them in relation to their specific goals;

c) to the extent that the models reviewed in item b) do not meet the requirements of item a), plan activities that can lead to the development and verification of appropriate environmental models.

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2:24 The Working Group on Mass Rearing of Juvenile Marine Fish (Chairman: Dr B. Howell, UK) will work by correspondence in 1994, with a view to meeting in Conwy, UK from 22-24 June 1995 to:

a) assess current trends, problems, and prospects for juvenile marine fish production in ICES Member Countries;

b) report on an inter-laboratory investigation of the potential use of cell symmetry as a predictive indicator of egg quality;

c) report on an inter-laboratory evaluation of the effects of different DHA/EPA profiles in food on production success;

d) report on an inter-laboratory investigation on the effects of selected wearing diets;

e) evaluate progress on the establishment of a data base of environmental conditions under which fish are reared;

f) determine on the potential for quality assessment criteria for juvenile animals.

A progress report on intersessional activities will be submitted to the 1994 Statutory Meeting.

2:25 The Working Group on Pathology and Diseases of Marine Organisms (Chairman: Dr A. McVicar, UK) will meet in Moncton, New Brunswick, Canada from 21-26 March 1994 to:

a) analyze national reports on new disease trends in wild fish, crustacean, and mollusc populations;

b) analyze national reports on new disease trends in cultured fish and shellfish;

c) evaluate the Sub-Group Report on the Analysis of Fish Disease Prevalence Data;

d) assess the intersessional data presented on recent field trials and other relevant information on fish vaccines;

e) compare antibiotic resistance profiles of *Aeromonas salmonicida* performed in selected laboratories;

f) compare the European legislation, the OIE rules, and the regulations under consideration in North America regarding the transfer of molluscs between countries, and provide advice on the standardization of the control methods used to monitor mollusc disease, based on the information coming from the above comparison and from data on current mollusc research;

g) evaluate the significance of additional and new data on *Icthyophonus* infection in herring and consider the need for a third special joint meeting between pathology and stock assessment groups on *Icthyophonus*;

h) review the report of the Study Group on the Occurrence of M-74 in Fish Stocks;

i) develop and coordinate plans for the Mariculture Committee special topic on "Parasites in Mariculture" at the 1994 Statutory Meeting;

j) provide information to ACME on the types of studies that can elucidate possible relationships between fish diseases and pollution;

k) prepare, in cooperation with the Baltic Marine Biologists, a preliminary report for ACME on fish diseases in the Baltic Sea, and provide plans for future studies of fish diseases in the Baltic Sea;

l) compile and evaluate information with respect to the recently reported parasite in cod larvae from the Baltic and surrounding waters.

2:25:1 A Sub-Group on Statistical Analysis of Fish Disease Data (Chairman: Dr A.D. Vethaak, Netherlands) will work by correspondence in 1994 to:

a) analyze the updated and validated ICES fish disease data base for all species examined according to the new standard protocol in the Baltic Sea and the North Sea;

b) consider available information on factors with a possible impact on the prevalence and spatial distribution of fish diseases such as stock identity, stock density, recruitment, age-structure, or fishing effort for dab, cod, and flounder.

2:26 The Working Group on Environmental Interactions of Mariculture (Chairman: Prof. H. Rosenthal, Germany) will meet in Cork, Ireland from 28-31 March 1994 to:

a) update the catalogue of ongoing research programmes on environmental interaction issues related to mariculture;

b) examine biological interactions between types of mariculture and other coastal zone uses;

c) identify major long-term research priorities, particularly in the subject area of resolving conflicts in the use of the marine environment;

d) assemble and compile, intersessionally, information about ongoing monitoring programmes in each country related to the assessment of the impacts and interactions of mariculture, with a view to its publication in the *ICES Cooperative Research Report* series;

e) evaluate the potential environmental effects of new culture systems in ICES Member Countries;

f) assemble and comment on the evidence for the interactions of complexed and/or particle-bound contaminants (e.g., antibiotics, antifoulants, biocides) from fish farms with marine flora and fauna, and the significance of these interactions within marine ecosystems;

g) prepare guidelines on the ecotoxicological information necessary to permit assessment of the relative environmental impacts of therapeutants;

h) develop and coordinate plans for a Mariculture Committee special topic on "Mariculture and Coastal Zone Management" at the 1994 Statutory Meeting.

2:27 The Working Group on Genetics (Chairman: Dr J. Mork, Norway) will be renamed the Working Group on Application of Genetics in Fisheries and Mariculture and will meet at ICES Headquarters from 9-11 March 1994 to:

a) prepare information for use by the Study Group on Interactions of Wild, Ranched (Enhanced), and Cultured Salmon;

b) review the interim conclusions of the Study Group on Stock Identification Protocols for Finfish and Shellfish Stocks;

c) review knowledge of the amount of gene flow between specific natural populations as well as between cultured and specific natural populations with a view to proposing future studies;

d) propose studies on local adaptations of specific natural populations using combined qualitative (e.g., gene markers) and quantitative (e.g., family studies) genetic approaches;

e) report on the status of selective breeding and genetic modifications relative to improving production traits such as growth performance, product quality, disease resistance, etc.;

f) evaluate the options for application of genetics research to fisheries and mariculture questions of concern to ICES.

2:28 A Workshop to Evaluate the Potential of Stock Enhancement (Co-Chairmen: Ms J.G. Støttrup, Denmark and Mr T. Jakobsen, Norway) will be held in Charlottenlund, Denmark from 19-24 May 1994 to:

a) define the objectives and options of stock enhancement;

b) identify biological, ecological, and economic criteria for assessing the potential for stock enhancement;

c) recommend procedures for testing these criteria;

d) review current work in this field and identify priorities for future work.

DEMERSAL FISH COMMITTEE

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2:29 The Study Group on Redfish Stocks (Chairman: Dr J. Magnusson, Iceland) will meet at ICES Headquarters from 2-3 May 1994 to coordinate the international survey to be held in June/July 1994.

2:30 A Workshop on Age Reading of Oceanic *Sebastes mentella* will be held in Bremerhaven, Germany in November-December 1994 under the co-chairmanship of Mr D.B. Atkinson (Canada) and Dr K. Kosswig (Germany) to:

a) clarify the reasons for the differences in results between different methods;

b) explore the possibilities of using conversion factors between different time series.

Details will be discussed by correspondence during 1994 on the basis of the advice from the Workshop on Sampling Strategies for Age and Maturity Data which will be held in February 1994.

2:31 The Study Group on Beam Trawl Surveys (Chairman: Dr R. Millner, UK) will work by correspondence in 1994 to:

a) carry out a detailed evaluation of the data series;

b) compare the variation in catch rates of plaice and sole among years and areas;

c) evaluate the survey designs and prepare modifications, if necessary.

2:32 The Study Group on the Coordination of Bottom Trawl Surveys in Sub-areas VI, VII, and VIII and Division IXa (Chairman: Mr J.C. Poulard, France) will work by correspondence in 1994 to:

a) assemble data from different national research vessel surveys in a common data base;

b) describe, on the basis of survey results, the seasonal distribution and relative abundance of hake, mackerel, horse mackerel, anglerfish (*Lophius budegassa* and *L. piscatorius*), and megrim (*Lepidorhumbus whiffiagonis* and *L. boscii*) in the area;

c) promote collaboration between national laboratories in coordinating bottom trawl surveys in the area.

PELAGIC FISH COMMITTEE

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2:33 A Workshop on Herring Age Reading will be held in IJmuiden, Netherlands from 20-24 January 1994 under the chairmanship of Mr A. Corten (Netherlands) to:

a) review and evaluate established methodologies in age determination of herring;

b) describe protocols for age determination of herring (using photographs/diagrams to show important features and how interpretations were made), define, in particular, ways to identify formation of winter rings in different seasons by age, and suggest procedures for quality control of national age readings;

c) report to the Pelagic Fish and Baltic Fish Committees at the 1994 Statutory Meeting.

2:34 The International Bottom Trawl Survey Working Group (Chairman: Dr H.J.L. Heessen, Netherlands) will meet at ICES Headquarters from 12-14 January 1994 to:

a) evaluate progress made in the quarterly bottom trawl surveys in Sub-area IV and Division IIIa;

b) propose any improvements in the collection of biological and environmental data;

c) propose any improvements in the survey manual;

d) propose any improvements to data exchange and the data bases;

e) coordinate future surveys.

2:35 A Mackerel/Horse Mackerel Egg Production Workshop will be held in Vigo, Spain from 31

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2:35 ctd. January - 4 February 1994 under the chairmanship of Mr A. Eltink (Netherlands) to:

a) coordinate the timing and planning of the 1995 and 1996 Mackerel/Horse Mackerel Egg Surveys in ICES Sub-areas IV and VI-IX for estimating spawning stock size;

b) evaluate the accuracy and precision of the estimates of spawning stock size from both the annual and daily egg production methods, and advise on the preferred method;

c) undertake a comprehensive review of survey and analytical techniques (consider techniques other than arithmetic averaging for estimating unsampled rectangles and consider how the vertical hauls with a much lower volume filtered have to be treated for the standard error estimation);

d) complete the analysis of the daily egg production method applied to the southern horse mackerel stock based on the 1992 egg and trawl survey data.

2:36 A Study Group on Herring Assessment and Biology in the Irish Sea and Adjacent Areas will be established under the chairmanship of Dr M. Armstrong (UK) and will meet in Belfast, Northern Ireland, UK from 21-25 February 1994 to:

a) investigate the stock structure in the herring management units in the Irish Sea and their relation to stocks in adjacent areas;

b) revise existing data bases if it were found necessary to carry out assessments for stocks/areas other than those in existence at present;

c) examine all available survey data with a view to obtaining recruitment indices for appropriate stocks/management units;

d) suggest and plan necessary research programmes to improve the present assessment of herring stocks in this area;

e) report to the 1994 meetings of the Herring Assessment Working Group for the Area South of 62°N and the Study Group on Stock Identification Protocols for Finfish and Shellfish Stocks.

2:37 The Planning Group for Herring Surveys (Chairman: Mr A. Aglen, Norway) will meet in Bergen, Norway from 24-27 May 1994 to:

a) investigate and define procedures for species allocation of acoustic records;

b) examine procedures for combining disaggregated length and age data from individual stations;

c) coordinate the methods used on acoustic surveys for herring in the Northeast Atlantic and Baltic.

BALTIC FISH COMMITTEE

C.Res.1993/

2:38 The Planning Group for Hydroacoustic Surveys in the Baltic (Chairman: Mr E. Götze, Germany) will meet at ICES Headquarters from 11-13 April 1994 to:

a) evaluate the results of the 1993 surveys and report to the 1994 meeting of the Working Group on the Assessment of Pelagic Stocks in the Baltic (13-21 April 1994);

b) finalize the coordination of participating vessels in the 1994 surveys concerning areas and time covered;

c) prepare a standard format for the results of hydroacoustic surveys in order to facilitate data exchange and merging data into a common data base.

2:39 The Study Group on the Evaluation of Baltic Fish Data (Chairman: Dr T. Raid, Estonia) will work by correspondence in 1994 to:

a) prepare a standardized protocol for fish sampling of both commercial and research vessel catches;

b) update the Young Fish Survey data base.

2:40 A Workshop on Baltic Cod Age Reading will be held in Gdynia, Poland from 6-10 June 1994 under the chairmanship of Dr J. Netzel (Poland) to:

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2:40 ctd.

a) describe protocols for age determination using photographs and/or diagrams to illustrate age-reading criteria;

b) conduct comparative age readings on thin sections of cod otoliths in order to reach common interpretation;

c) conduct comparative age readings on otoliths prepared the standard way (broken);

d) evaluate the results taking into account methods recommended by the Workshop on Sampling Strategies for Age and Maturity Data.

SHELLFISH COMMITTEE

C.Res.1993/

2:41 The Study Group on the Biology, Life History, and Assessment of *Majid* Crabs (Chairman: Mr D. Latrouite, France) will work by correspondence in 1994 to prepare for a meeting to be held in La Coruña, Spain for four days in 1995 to:

a) augment the present geographical comparison of life histories by including new species and areas;

b) identify nursery areas for the various species in the ICES area and establish survey protocols;

c) develop assessment methodology, investigate biological reference points for management, and assess the possible genetic effects of size-selective harvesting;

d) assess the future production potential of spider crabs in Europe, taking into account the factors affecting quality.

2:42 The Study Group on Life Histories and Assessment Methods of *Nephrops* Stocks (Chairman: Dr N. Bailey, UK) will meet in Aberdeen, Scotland, UK from 23-26 November 1993 to:

a) continue to investigate the performance and sensitivity of the slicing/VPA method;

b) examine other analytical and direct methods of assessing *Nephrops* populations;

c) provide abundance indices (CPUE and/or LPUE) separately for the two sexes and investigate the likely significance of changes in catchability on *Nephrops* assessments;

d) present new findings on the population biology of *Nephrops*, discuss implications, and update input parameter values as appropriate;

e) investigate the most likely form of the stock/recruitment relationship in *Nephrops* stocks.

2:43 The Study Group on the Life History, Population Biology, and Assessment of *Crangon* (Chairman: Dr T. Neudecker, Germany) will meet in Hamburg, Germany from 15-18 March 1994 to:

a) continue the compilation of biological and assessment data describing the life history and exploitation of *Crangon* in the southern North Sea;

b) evaluate the assessment of mortality using length-based methods;

c) test the validity of competing hypotheses about the impact of fishing, predation, and eutrophication on the stocks of *Crangon* in the southern North Sea.

2:44 A Study Group on Spatfall and Recruitment in Bivalve Stocks will be established under the chairmanship of Dr R. Dijkema (Netherlands) and will work by correspondence during 1994 to:

a) continue the compilation and analysis of data on the variation of spatfall and recruitment in bivalve stocks and its causes;

b) coordinate future field and laboratory investigations.

2:45 The Study Group on Life Histories and Assessment Methods of *Pandalus* Stocks (Chairman: Mr S. Munch-Petersen, Denmark) will work by correspondence in 1994 to:

a) report on the status of the *Pandalus* fisheries in the North Atlantic;

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2:45 ctd.

b) describe the biology of the *Pandalus* stocks and prepare an inventory of the biological data available for assessment purposes;

c) report on the information available for estimating adult and recruit abundance, including the results of trawl surveys, catch-per-effort data, and stomach contents of predators;

d) evaluate analytical and other assessment methods.

2:46 The Study Group on the Life History and Assessment of Cephalopods (Chairman: Dr U. Piatkowski, Germany) will work by correspondence in 1994 to:

a) continue the collection of data on the life history and exploitation of commercially relevant Cephalopod stocks in the North-east Atlantic;

b) evaluate existing assessment methods and develop new ones;

c) develop biological reference points for the management of Cephalopod stocks;

d) describe the trophic interactions between Cephalopods and fish populations.

BIOLOGICAL OCEANOGRAPHY COMMITTEE

C.Res.1993/

2:47 The ICES/IOC Study Group on the Dynamics of Algal Blooms will be re-established as the ICES/IOC Working Group on Harmful Algal Bloom Dynamics (Chairman: Ms B. Reguera, Spain) and will meet in Vigo, Spain from 9-12 May 1994 to:

a) continue the development of an understanding of the dynamics of harmful algal blooms, including experimental aspects of harmful algal bloom dynamics;

b) review progress in the implementation and/or execution of physical-biological interaction investigations in the pilot study areas (Gulf of Maine, Skagerrak-Kattegat, Iberia);

c) review the results of the Workshop on Modelling the Population Dynamics of Harmful Algal Blooms and propose further steps to improve the dialogue between physicists and biologists;

d) finalize the planning of the Workshop on Intercomparison of *In Situ* Growth Rate Measurements;

e) consider the integration of ongoing research activities on harmful algae phenomena in the ICES area into the existing global international programme on harmful algal blooms (IOC-FAO/OSLR/HAB);

f) collate and discuss national reports on algal blooms and review the effectiveness of the present reporting format;

g) evaluate strategies useful in investigating harmful algal blooms and in mitigating their detrimental effects on marine ecosystems (e.g., the efficacy of regional harmful algal bloom monitoring systems);

A joint session with the Working Group on Shelf Seas Oceanography will be held on 9-10 May 1994 to consider items a), b), and c).

IOC will be invited to co-sponsor this Working Group.

The Working Group will report to the Biological Oceanography and Hydrography Committees.

2:48 A Workshop on Intercomparison of *In Situ* Growth Rate Measurements will be held in Ria de Aveiro, Portugal from 25-29 July 1994 under the chairmanship of Ms M.A. Sampayo (Portugal) to undertake an intercomparison study of *in situ* growth rates of dinoflagellates in support of the study of harmful algal blooms.

IOC will be invited to co-sponsor the Workshop.

2:49 A Workshop on Modelling the Population Dynamics of Harmful Algal Blooms will be held in Vigo, Spain from 4-7 May 1994 under the

2:49 ctd. co-chairmanship of Dr P. Tett (UK) and Dr W. Fennel (Germany) to:

a) investigate the use of numerical models in improving the understanding of the dynamics of harmful algal blooms;

b) use the above models to assist in the design of sampling strategies, interpretation, and forecasting of harmful algal blooms;

c) develop a dialogue between physical and biological oceanographers with respect to harmful algal blooms, including the role of physical inputs and temporal and spatial scales.

IOC will be invited to co-sponsor this Workshop.

2:50 The Study Group on FISHBASE (Chairman: Dr R. Froese, Germany) will work by correspondence in 1994 to:

a) finalize the incorporation of suitable data into FISHBASE;

b) explore links with ICES activities, such as the planned data base on rare fishes.

2:51 The Study Group on Zooplankton Production (Chairman: Mr H.-R. Skjoldal, Norway) will meet in Plymouth, England, UK from 21-24 March 1994 to:

a) review the results of the seagoing and laboratory workshops;

b) review the draft Zooplankton Methodology Manual;

c) evaluate and recommend standardization and improvement of methods;

d) review plans for the Laboratory Workshop on *Calanus*.

2:52 A Laboratory Workshop on *Calanus* will be held in Bergen, Norway for 2-3 weeks in April/May 1994 under the co-chairmanship of Prof U. Båmstedt (Norway) and Mr H.-R. Skjoldal (Norway) to undertake an intercomparison of various techniques for the measurement of the growth and production of *Calanus finmarchicus*.

2:53 A Workshop on Trans-Latitudinal Study of *Calanus finmarchicus* in the North Atlantic will be held in Oslo, Norway from 5-8 April 1994 under the co-chairmanship of Dr K. Tande (Norway) and Dr C. Miller (USA) to:

a) critically survey present knowledge of *Calanus finmarchicus*;

b) discuss the role of the population dynamics of this dominant copepod species in the North Atlantic in relation to latitudinal variation, hydrography, and fish recruitment;

c) prepare the outline of an implementation plan for a programme of research.

The Workshop will be coordinated with the Laboratory Workshop on *Calanus*.

2:54 The Working Group on Recruitment Processes (Chairman: Dr M. Heath, UK) will meet in Lysekil, Sweden from 14-17 June 1994 to:

a) review ongoing work in connection with the cod and haddock checklist;

b) assemble and analyze data on the inter-species and inter-regional variability in growth of larval fish;

c) critically review and refine the performance of a candidate set of larval growth models, with reference to Norwegian data on larval cod;

d) review progress in the development of an analytical model of otolith increment formation;

e) review progress on interpreting temperature histories of larvae from otolith elemental and isotopic analysis;

f) review results of studies examining the relationships between larval size, growth, and mortality rates;

g) consider the implications of the report of the Study Group on Methods of Spatial and Temporal Integration for the design and conduct of field investigations of recruitment processes.

2:55 The Benthos Ecology Working Group (Chairman: Dr P. Kingston, UK) will meet in Yerseke, Netherlands from 2-6 May 1994 to:

2:55 ctd.

a) prepare information on and, if possible, compile an initial list of indicator species, particularly with reference to species sensitive to physical disturbance of the seabed, and report to ACME;

b) prepare, for ACME, guidelines on quality assurance procedures for benthos studies;

c) review and report to ACME on how benthic communities are affected by physical disturbance of the sea floor;

d) review cooperative benthic studies conducted throughout the ICES area;

e) further review existing benthos data bases and their compatibility and availability to benthic scientists, and investigate the establishment of an ICES North Sea benthos data base;

f) produce an initial list of marine benthic indicator species within the ICES area which are potentially vulnerable to physical disturbance of the sea bed;

g) review current techniques for sampling the benthos of hard bottom substrata;

h) review the feasibility of conducting an analysis of all available North Sea benthos data and explore the desirability of a follow-up North Sea benthos survey in 1996;

i) organize the production of ICES identification sheets on marine benthos and explore the possibility of producing a computer-aided 'expert' system.

2:56 A Working Group on Phytoplankton Ecology will be established under the chairmanship of Dr F. Colijn (Netherlands) and will meet at ICES Headquarters from 23-26 March 1994 to:

a) investigate the incorporation of new techniques (e.g., nutrient uptake measurements, algal culturing, satellite colour imagery) in phytoplankton ecology studies;

b) consider ways of developing an understanding of nutrient/phytoplankton interactions;

c) assess current techniques used in the measurement of algal biomass, growth rate, and productivity;

d) examine the mechanisms behind processes such as seasonal succession and long-term development of phytoplankton in relation to natural variability and anthropogenic influence;

e) report to ACME on progress made by the former Working Group on Phytoplankton and the Management of their Effects on planning a ^{14}C method evaluation exercise, and provide advice on future action.

The Working Group will report to the Biological Oceanography Committee and be referenced to the Marine Environmental Quality Committee.

2:57 The Study Group on Seabird/Fish Interactions (Chairman: Prof. G. Hunt, USA) will meet in Aberdeen, Scotland, UK from 5-7 September 1994 to:

a) evaluate the evidence for the potential effects of fisheries on the local abundance of prey species in the context of the spatial and temporal scales relevant to seabirds, particularly with regard to the North Sea;

b) assess the consumption of shellfish by seaducks and shorebirds, as well as possible interactions with shellfish fisheries within the ICES area;

c) collate data on the diets of the major consumers in seasons and areas presently undersampled and perform additional analysis of fish consumption by age class;

d) synthesize appropriate data sets on seabirds, prey populations, and physical oceanographic phenomena that could elucidate spatial and temporal variability in the North Sea ecosystem.

2:58 The Study Group on Gulf III Sampler Efficiency (Chairman: Prof. D. Schnack, Germany) will work by correspondence in 1994 to:

a) coordinate comparative calibration tests to be made in a towing tank in Hamburg, Germany with three basic types of Gulf III samplers presently used in ICES ichthyoplankton survey programmes;

b) identify and simulate testing of non-moving and possibly non-intrusive flow measuring systems to be used as a standard device for measuring the volume of water filtered during hauls;

2:58 ctd. c) define a standard procedure for *in situ* flowmeter calibrations.

2:59 The Study Group on Methods of Spatial and Temporal Integration (Chairman: Prof. E. Gurney, UK) will work by correspondence in 1994 to complete the tasks assigned to it in C. Res.1992/2:51.

ANADROMOUS AND CATADROMOUS FISH COMMITTEE

2:60 A Joint EIFAC/ICES Working Group on Eel will be established under the chairmanship of Dr C. Moriarty (Ireland), with membership to include the EIFAC Working Party on Eel and appropriate ICES experts, and will meet for 5 days either in Spain in September 1994 or in the Netherlands in May 1995 at national expense to:

a) gather information on the stock of eel;

b) prepare case studies relating to the biology and management of eel and facilitate their publication;

c) prepare reviews of specified topics in eel biology and management with a view to making recommendations for cooperative research;

d) consider the reasons for the reduced catches of young eel in European and American rivers.

2:61 A Study Group on Anadromous Trout will be established under the chairmanship of Mr B. Jonsson (Norway) and will meet in Trondheim, Norway for 3 days in August 1994 at national expense to:

a) gather information on the population status of anadromous brown trout and anadromous rainbow trout in different countries;

b) summarize information on the variation in population structure (residents and migrants) and life history in anadromous brown trout in various areas;

c) identify major causes of fluctuations in population abundance in anadromous brown trout.

2:62 A Study Group on Interactions of Wild, Ranched (Enhanced), and Reared Salmon will be established under the chairmanship of Mr A. Youngson (UK), with representation from the Anadromous and Catadromous Fish and Mariculture Committees, Working Group on Environmental Interactions of Mariculture, Working Group on Pathology and Diseases of Marine Organisms, Working Group on Introductions and Transfers of Marine Organisms, Working Group on Genetics, and Working Group on North Atlantic Salmon, and will meet in Reykjavik, Iceland from 5-6 April 1994 at national expense to:

a) respond to a question by NASCO to evaluate the impact of salmon aquaculture on wild stocks with specific reference to genetic, disease, and parasite, ecological, and environmental impacts and to any impacts from current hatchery practices;

b) develop preliminary plans for an ANACAT and Mariculture Committee Joint Session for the 1995 Statutory Meeting on "Interactions of Wild, Reared, Enhanced, and Ranched Salmon" for consideration by the parent Committees at the 1994 Statutory Meeting;

c) report to the meeting of the Working Group on North Atlantic Salmon to be held in Reykjavik, Iceland from 6-15 April 1994 and to ACFM.

NASCO will be invited to attend the meeting in an observer capacity.

2:63 The Study Group on Stock Identification Protocols for Finfish and Shellfish (Chairman: Dr K. Friedland, USA) will meet in Lowestoft, England, UK from 15-18 August 1994 to:

a) review, describe, and evaluate established methodology to define finfish and shellfish stocks and, in particular, evaluate different methods used to separate herring stocks and apply recent mathematical advances in pattern recognition and classification on available meristic and morphometric data;

b) continue to describe protocols for the application of stock identification and classification data as they may vary by species, fisheries, and life history characteristics;

C.Res.1993/

2:63 ctd.

c) evaluate the usefulness of the data derived from different genetic methods for stock composition analysis;

d) report to the Demersal Fish, Pelagic Fish, Baltic Fish, Anadromous and Catadromous Fish, and Shellfish Committees at the 1994 Statutory Meeting.

2:64 A Workshop on Salmon Spawning Stock Targets in the Northeast Atlantic will be held under the chairmanship of Mr E.C.E. Potter (UK), with co-sponsorship by the Atlantic Salmon Trust, in Bushmills, Northern Ireland, UK, from 7-9 December 1993 to:

a) evaluate methods that could be used to establish egg deposition requirements or other spawning escapement targets for Atlantic salmon stocks;

b) examine methods that could be used to determine the proportions of the various stock components required to meet the escapement targets;

c) determine the data that are available in the Northeast Atlantic which could be used to set spawning targets;

d) make recommendations on the appropriateness of the various methods in the Northeast Atlantic;

e) report to the Working Group on North Atlantic Salmon, the Anadromous and Catadromous Fish Committee, and ACFM. The report will also be made available to the Atlantic Salmon Trust.

MARINE MAMMALS COMMITTEE

C.Res.1993/

2:65 The Study Group on Seals and Small Cetaceans in European Seas (Chairman: Dr J. Harwood, UK) will meet in Cambridge, England, UK from 28 February - 4 March 1994 to:

a) carry out a comprehensive review of the current and historical size of the marine mammal populations within its area of responsibility and the methods used to estimate them, and develop a standardized format for presenting this information; the area of responsibility of the Study Group will be extended to include Divisions VIb, VIIc and k, VIIIc,d,e, IXa and b, and the coasts of the Azores archipelago in Subarea X, in addition to the areas already covered;

b) assess the relative importance of factors (such as disturbance, pollution, disease, food availability, by-catches, and strandings) which are believed to have an effect upon survival and reproduction in marine mammal populations, and identify the research that will be necessary to clarify and quantify these effects;

c) evaluate the size of seal populations in the Baltic Sea and assess their condition in relation to contamination and by-catches.

RESOLUTIONS INVOLVING COOPERATION WITH OTHER ORGANIZATIONS

C.Res.1993/

3:1 A coordinated series of ichthyoplankton surveys of the North Sea and Division IIIa will be carried out in 1996 as part of the ICES/GLOBEC Cod and Climate Change programme under the general coordination of Dr K. Brander (UK) and Mr J. Nichols (UK).

The views and support of the fish stock assessment Working Groups, the Multispecies Assessment Working Group, and the Working Group on Ecosystems Effects of Fishing Activities will be solicited by the Coordinators at the planning stage.

3:2 ICES will collaborate with the organizers of the "British Marine Fishes Data Base" (BMFD) in recording "rare" fishes in the ICES area. In this context, a meeting will be held at ICES Headquarters for one day in October-November 1993 at Council expense to discuss questions relating to the management, analysis, and quality control of the data base and practical details associated with the project. The meeting will be attended by the Chairmen of ACFM and ACME, the ICES Fishery Secretary and Fisheries Assessment Scientist, and Dr G. Potts (UK) and Dr S. Swaby (UK).

C.Res.1993/

3:3 ICES will collaborate with the Atlantic Salmon Trust in co-sponsoring a Workshop on Salmon Spawning Stock Targets in the Northeast Atlantic (ref. C.Res.1993/2:64).

3:4 ICES will be represented at the Sixteenth Session of the Coordinating Working Party on Fishery Statistics (CWP), which will be held at ICCAT Headquarters in Madrid, Spain in July 1994, by the Chairman of the Statistics Committee and the ICES Fishery Secretary, both at Council expense, and by a representative of an ICES Member Country at national expense.

3:5 An ICES/HELCOM Workshop on Quality Assurance of Pelagic Measurements in the Baltic Sea (Chairman: Dr J. Alheit, Germany) will be held in Warnemünde, Germany for three days in March or April 1994 to:

a) exchange information, views, and experience on the potentialities and limitations of current methodology;

b) outline and decide on parameters and methods to be included in an intercomparison/intercalibration exercise to be executed in 1995.

3:6 An ICES/HELCOM Workshop on Quality Assurance of Benthic Measurements in the Baltic Sea (Chairman: Dr H. Rumohr, Germany) will be held in Kiel, Germany for three days in March or April 1994 to:

a) review existing information on the potentialities and limitations of current methodology as prepared, among others, by the Benthos Ecology Working Group, and prepare a report on the criteria to be considered in the preparation of quality assurance procedures for benthos measurements in the Baltic Sea;

b) outline and decide on parameters and methods to be included in an intercomparison/intercalibration exercise to be executed in 1995.

3:7 ICES will establish a dialogue with international agencies, such as the Commission of the European Communities, relative to the increasing movements through new trade agreements of aquatic organisms and their products, to insure that potential ecological and genetic impacts of such movements, not just the prevention of the spread of disease agents, are taken into consideration.

3:8 A BMB/ICES Workshop on Flounder Diseases and Parasites in the Baltic Sea (Convener: Dr G. Bylund, Finland) will be held in Turku/Åbo, Finland from 26-29 October 1994 to:

a) compile available information on parasites and diseases of Baltic flounder;

b) propose directions for future research on flounder parasites and diseases in the Baltic Sea.

3:9 A BMB/ICES Sea-Going Workshop on Diseases and Parasites of Baltic Fish (Co-Conveners: Dr T. Lang, Germany and Dr J. Thulin, Sweden) will be held on board the German R/V "Walther Herwig" for two weeks in November 1994 to:

a) obtain further information on the distribution and prevalence of diseases of flounder in the Baltic Sea;

b) standardize the methodology to be used for fish disease surveys in the Baltic Sea, with particular reference to flounder.

OTHER RESOLUTIONS REQUIRING ACTION

C.Res.1993/

4:1 Step 4 of the ICES/IOC/OSPARCOM Intercomparison Programme on the Analysis of Chlorobiphenyls in Marine Media will be organized in 1993 under the coordination of Dr J. de Boer (Netherlands). This step will entail the study of a seal blubber tissue (if possible, otherwise an oil), a fish tissue, and a dried sediment. A fee will be levied on each participant to cover the costs of samples.

4:2 An intercomparison of measurements of Scope-For-Growth (SFG) in bivalve molluscs will be conducted under the coordination of Dr J. Widdows (UK) involving the following major components:

a) development of a proposed protocol for SFG measurements in bivalve molluscs;

b) measurement by participating laboratories of SFG in live samples prepared by the coordinating laboratory;

4:2 ctd.

c) assessment of the applicability of SFG to monitoring, including the objectives for which it may be used;

d) ICES will provide adequate funds (about DKK 20,000) to cover the costs of consumables, shipping, etc., for this exercise.

4:3 ICES Member Countries will be encouraged to submit data on the prevalence of *Icthyophonus* in fish to the ICES Secretariat using the agreed reporting format for use by relevant ICES Working Groups studying the distribution and prevalence of this disease.

4:4 The General Secretary will write to the Foreign Ministers of the Baltic countries requesting that consideration be given to more flexible arrangements to allow rapid access by research vessels belonging to any Baltic country to parts of the Exclusive Economic Zone of any other Baltic country during situations requiring urgent action such as major Baltic inflows and toxic algal bloom events. Such arrangements will help to protect and improve the health of the Baltic Sea.

4:5 In view of the need to improve the reliability and credibility of advice on fishery management provided by ICES, the General Secretary will make representations to all Member Countries at diplomatic level regarding:

a) the late submission of fishery landings statistics;

b) the existence of misreporting and underreporting of landings which, in an increasing number of cases, occur on a scale that undermines the ability of ICES to carry out assessments;

c) the absence of information about the quantities of fish discarded, including catches released before being taken on board.

4:6 ICES will encourage its Member Countries to apply more flexible rules for the access of research vessels to and the conduct of research work in the Exclusive Economic Zones of ICES Member Countries, in particular in urgent cases such as those involving major inflows of water to the Baltic Sea, unusual algal blooms, and similar events, but preferably also for marine research in general.

4:7 On the basis of the considerations of the Working Group on Introductions and Transfers of Marine Organisms on the introduction of the North American Atlantic bay scallop *Argopecten irradians* to France, Member Countries are advised that:

a) the Council does not oppose the continued development of Atlantic bay scallop culture in France, subject to continued adherence to the ICES Code of Practice, and in the form of the importation of brood stock (based upon site visits to the USA and Canada) into quarantine and the development of F_1 generation in hatcheries;

b) the Council, however, recommends that further investigations be carried out relative to the potential ecological impact of the establishment of wild populations of this species in the Mediterranean and European waters of the Atlantic, that more precise predictions of the geographic range of this species should be obtained if it were to become established, and that such information be provided to the Working Group prior to the open sea release of this species.

4:8 On the basis of the considerations of the Working Group on Introductions and Transfers of Marine Organisms on the introduction of the Japanese alga *Porphyra yezoensis*, strain U-51, by a private party to the State of Maine (USA) and to the Province of New Brunswick (Canada), Member Countries are advised that:

a) the Council does not oppose the continued development of Japanese algal (nori) culture in the State of Maine and the Province of New Brunswick, subject to continued adherence to the ICES Code of Practice, and under the culture and grow-out conditions presented to the Council;

b) the Council advises that, upon careful examination of the available scientific evidence, commercial-scale development of *Porphyra yezoensis* populations in the open sea in the Gulf of Maine may lead to rare natural reproduction. However, there appears to be limited ecological risk relative to the establishment of this species in Maine and New Brunswick;

c) the Council requests that the Working Group on Introductions and Transfers of Marine Organisms be provided with annual reports on the culture sites of this alga, on any observed reproduction in natural waters, and on any dispersal, natural or anthropogenic, that may occur.

REPORT ON ADMINISTRATION FOR THE YEAR 1 NOVEMBER 1992 TO 31 OCTOBER 1993

1 THE COUNCIL AND ITS MEMBERS

1.1 Country Membership

The Council's membership status changed during the past year with the accession by the Republic of Latvia to the Convention on 17 September 1993.

An application for Council membership had been received from the Latvian Ministry of Foreign Affairs on 29 May 1992 and subsequently ratified by a required three-fourths of the Member Country Governments in August 1993. The Danish Ministry of Foreign Affairs had subsequently invited the Government of Latvia to deposit an instrument of accession.

The Danish Ministry of Foreign Affairs received an application for Council membership from the Estonian Ministry of Foreign Affairs on 14 May 1993, and invitations to ratify that application were sent to Member Country Governments. By 22 September, three-fourths (13) of the Member Countries had ratified the application and the Government of Estonia had been invited to accede to the Convention. As of 31 October, Estonia had not yet deposited an instrument of accession.

Expressions of interest in Council membership were received in May and June 1993 from Lithuania and Belarus, and relevant information about the Council was sent to officials in both countries.

The President and General Secretary visited Estonia and Latvia during 21-26 March for meetings with the two relevant marine research institutes and their scientists, appropriate government officials, and others to explain the work and functions of ICES and to discuss financial arrangements and other aspects of Council membership.

1.2 Payment of National Contributions

As of 31 October, all national contributions to the Budget for Financial Year 1992/1993 had been paid, and all countries except Latvia, Poland, Portugal, and Sweden had paid their contributions for Financial Year 1993/1994.

1.3 National Delegates

The following changes in national Delegates had been announced as of 31 October 1993:

a) Dr J.W.D.M. Henfling was appointed to replace Mr B.B. van der Meer as a Delegate of the Netherlands.

b) Dr T. Linkowski was appointed to replace Dr Z. S. Karnicki as a Delegate of Poland.

Dr J.G. Shepherd served as Acting Delegate of the United Kingdom during one session of the Delegates meeting at the 1993 Statutory Meeting.

1.4 Chairmen of Committees

The Chairman of the Mariculture Committee (Prof. H. Ackefors, Sweden) completed his three-year term on 31 October 1993. Dr R.H. Cook (Canada) was elected the new Chairman of the Mariculture Committee at the 1993 Statutory Meeting.

Since the Chairman of the Consultative Committee, Prof. C.C.E. Hopkins (Norway) (in the second year of a three-year term), was appointed the next General Secretary, Dr R.C.A. Bannister (UK) was elected the new Chairman of the Consultative Committee. Since Dr Bannister was also in the second year of a three-year term as Chairman of the Shellfish Committee, Mr M. Héral (France) was elected the new Chairman of the Shellfish Committee.

Mr E. Kirkegaard (Denmark) and Dr K. Richardson (Denmark) were appointed by the Council to serve three-year terms as Chairmen of ACFM and ACME, respectively. Mr Kirkegaard replaced Dr F. Serchuk (USA), whereas Dr Richardson had served as interim Chairman since 1 November 1992.

1.5 Members of the Advisory Committees

ACFM

The following changes have been made in the nationally nominated members, alternates, and *ex officio* members of ACFM:

a) Mr P. Degnbol replaced Mr E. Kirkegaard as the member nominated by Denmark, and Mr H. Lassen replaced Mr Degnbol as alternate member.

b) Mr E. Ikonen replaced Mr E. Aro as the member nominated by Finland.

c) Mr B. Vaske was removed as alternate member from Germany (no replacement has been named).

d) Mr M. Vitinsh was nominated as the member from Latvia, and Mr M. Pliksh was nominated as alternate member.

e) Prof. N. Daan replaced Dr R. Boddeke as the member nominated by the Netherlands, and Dr H. J.L. Heessen replaced Mr A. Corten as alternate.

f) Mr S.A. Iversen replaced Mr T. Jakobsen as the member nominated by Norway.

g) Dr J. Horbowy replaced Dr J. Kleniewski as alternate member nominated by Poland.

h) Ms G. Pestana replaced Dr (Ms) M.J. de Figueiredo as alternate member nominated by Portugal.

i) Mr J. Modin replaced Mr B. Sjöstrand as the member nominated by Sweden, and no alternate has been named in place of Mr Modin.

j) Mr E. Aro (Finland) replaced Prof. N. Daan (Netherlands) as Chairman of the Demersal Fish Committee and *ex officio* member of ACFM.

k) Mr B. Sjöstrand (Sweden) replaced Dr W. Weber (Germany) as Chairman of the Baltic Fish Committee and *ex officio* member of ACFM.

ACME

By action of the Delegates at the 1992 Statutory Meeting, the Advisory Committee on Marine Pollution (ACMP) was restructured with nationally nominated members and renamed the Advisory Committee on the Marine Environment (ACME). The following are the nationally nominated members, alternates, and *ex officio* members of ACME in 1993/1994:

a) Belgium: Dr C. Cooreman (member) and Mr P. Roose (alternate).

b) Canada: Dr J. Piuze (member) and Dr J.M. Bewers (alternate).

c) Denmark: Mr H. Gislason (member) and Ms M. Reuss (alternate).

d) Finland: Dr K. Kononen (member) and Dr M. Perttilä (alternate).

e) France: Mr P. Gentien (member) and Mr Y. Monbet (alternate).

f) Germany: Dr V. Dethlefsen (member) and Dr T. Lang (alternate).

g) Iceland: Mr J. Ólafsson (member).

h) Ireland: Ms J. Doyle (member) and Mr E. Nixon (alternate).

i) Latvia: Dr A. Yurkovskis (member).

j) Netherlands: Dr F. Colijn (member) and Prof. W. J. Wolff (alternate).

k) Norway: Dr R. Sætre (member) and Dr J. Skei (alternate).

l) Poland: Dr E. Andrulewicz (member) and Dr J. Warzocha (alternate).

m) Portugal: Dr C. Lima (member) and Mr C. Vale (alternate).

n) Russia: Dr S.A. Patin (member) and Dr V.V. Sapozhnikov (alternate).

o) Spain: Dr A. Rodríguez de Leon (member) and Ms B. Reguera (alternate).

p) Sweden: Mr K. Grip (member) and Dr I. Olsson (alternate).

q) UK: Dr G. Topping (member) and Dr J.E. Portmann (alternate).

r) USA: Dr J. McDowell Capuzzo (member) and Dr H. Windom (alternate).

s) Dr R.H. Cook (Canada) replaced Prof. H. Ackefors (Sweden) as Chairman of the Mariculture Committee and *ex officio* member of ACME.

t) Mr M. Héral (France) replaced Dr R.C.A. Bannister as Chairman of the Shellfish Committee and *ex officio* member of ACME.

u) Mr S. Carlberg (Sweden), Chairman of the Marine Environmental Quality Committee, Prof. T. Osborn (USA), Chairman of the Hydrography Committee, and Dr M. Reeve (USA), Chairman of the Biological Oceanography Committee, were the additional *ex officio* members of ACME.

2 COOPERATION WITH OTHER INTERNATIONAL ORGANIZATIONS

The Council continued its active cooperation during the past year with other international organizations, including those to which it provides scientific information and advice in the areas of fisheries management (NASCO, NEAFC, IBSFC, and the Commission of the EC) and marine pollution (OSPARCOM and HELCOM). Meetings during the period 1 November 1992 - 31 October 1993 of these and other organizations at which ICES was represented are included in Annex 1. Observer reports on some of these meetings were presented in Doc. C.M. 1993/Gen:1.

2.1 IOC/SCOR

On the basis of several Council Resolutions adopted at the 1992 Statutory Meeting, IOC was invited to be represented at meetings of the following: a) Marine Chemistry Working Group held in Ottawa, Canada from 8-13 February 1993 (C.Res.1992/2:33:1); b) Working Group on Biological Effects of Contaminants held in Charlottenlund, Denmark from 31 March - 2 April 1993 (C.Res. 1992/2:33:3); and c) Working Group on Phytoplankton and the Management of their Effects held at ICES Headquarters from 28-30 April 1993 (C.Res.1992/2:33:7).

In addition, IOC asked permission to be represented at the meeting of the Working Group on Marine Data Management which met in Aberdeen from 22-24 April 1993 (C.Res.1992/2:35). IOC was also represented at the meeting of the ICES/IOC Study Group on the Dynamics of Algal Blooms which met in Charleston, SC, USA from 8-11 February 1993 (C.Res.1992/2:52).

IOC accepted the Council's invitation to co-sponsor the new Study Group on Methods of Spatial and Temporal Integration which met in Glasgow, Scotland from 14-18 June 1993 (C.Res.1992/2:51). SCOR was also invited to co-sponsor this Study Group, but the matter has to be considered by its Executive Committee at its meeting in October 1993. However, SCOR agreed to provide financial support to two scientists from Eastern European countries to attend the Study Group meeting.

IOC and SCOR both accepted the Council's invitation to co-sponsor the Symposium on "Zooplankton Production - Measurement and Role in Global Ecosystems Dynamics and Biogeochemical Cycles" which will be held in Plymouth, England from 15-18 August 1994 (C.Res.1992/2:2).

Arrangements have been made with SCOR and IOC regarding the Council's role in the I-GLOBEC programme. The Council will sponsor a Cod and Climate Change programme of research as a North Atlantic component of I-GLOBEC (C.Res.1992/3:1), and the Chairman of the ICES Working Group on Cod and Climate Change (C. Res.1992/2:7) will serve as a member of the GLOBEC Steering Committee.

The Oceanography Secretary participated in meetings of several IOC groups: a) International Oceanographic Data and Information Exchange (IODE) held in Paris from 30 November - 9 December 1992; b) Group of Experts on the Technical Aspects of Data Exchange (GETADE) Sub-Group held at ICES Headquarters from 11-14 May 1993; c) Regional Archaeology and Data Rescue Workshop held in Obninsk, Russia from 17-21 May 1993, and d) Ocean-PC held at ICES Headquarters from 24-25 May 1993.

The General Secretary represented ICES at the Seventeenth Session of the IOC Assembly held in Paris from 25 February - 11 March 1993. The prominent role of ICES in research on harmful algal blooms was stressed, and the Council was invited to be represented on the IOC-FAO *Ad Hoc* Intergovernmental Panel on Harmful Algal Blooms.

2.2 Oslo and Paris Commissions (OSPARCOM) and North Sea Task Force

There has been considerable activity in the past year related to data handling obligations for the OSPARCOM Joint Monitoring Programme, provision of scientific advice to OSPARCOM, and drafting and review of the North Sea Task Force (NSTF) Quality Status Report (QSR).

Meetings of OSPARCOM and its subsidiary bodies at which ICES has been represented include: a) Nutrients Working Group of the Paris Commission held in Hamburg from 23-26 November 1992 (Oceanography Secretary) and in Gothenburg from 13-17 September 1993 (Oceanography Secretary); b) *Ad Hoc* Working Group on Monitoring held at ICES Headquarters from 30 November - 11 December 1992 (Environment Secretary, Mr J.R. Larsen, and Ms M. Sørensen); c) Joint Monitoring Group held in The Hague from 25-29 January 1993 (Chairman of ACME, Environment Secretary, and Mr J.R. Larsen); d) Joint Meeting of the Standing Advisory Committee on Scientific Advice (SACSA) and the Technical Working Group (TWG) held in Oslo from 18-19 March 1993 (Environment Secretary); and e) Fifteenth Joint Meeting of OSPARCOM held in Berlin from 14-19 June 1993 (Environment Secretary).

The General Secretary attended two separate meetings in London of the OSPARCOM Chairmen and Vice-Chairmen (CVC), one on 2 December 1992 and the other on 17 February 1993 to discuss the basis for the Commissions' financial contribution to ICES for scientific advice and data handling services, and a draft Memorandum of Understanding between ICES and the new Paris Commission. The General Secretary and Environment Secretary participated in a meeting with the Secretary and Vice-Chairman of OSPARCOM on 12-13 January 1993 at ICES Headquarters on this matter. In addition, the General Secretary also attended a meeting of the Commissions' Heads of Delegation in London on 28 April 1993 for discussions on the contribution for 1994.

The Ninth and Tenth Meetings of the NSTF were held in Bergen from 2-5 November 1992 and in The Hague from 2-5 March 1993, respectively. These Meetings focused primarily on the preparation of the QSR. ICES was represented by the Chairman of ACME, the Environment Secretary, the Oceanography Secretary, and Dr J.E. Portmann (NSTF Vice-Chairman) at the Ninth Meeting,

and by these four individuals plus Prof. N. Daan and Mr H. Gislason at the Tenth Meeting.

The Eleventh Meeting of the NSTF was held in Edinburgh from 22-25 June 1993 for the purpose of approving the QSR. ICES was represented by the Chairman of ACME, the Environment Secretary, the Oceanography Secretary, the Fishery Secretary, and Dr J.E. Portmann (NSTF Vice-Chairman).

Other meetings associated with the work of the NSTF at which ICES has been represented include: a) Experts Steering Group (ESG) held in Bergen on 2 November 1992 (Environment Secretary); b) NSTF Drafting Panel for QSR Chapter 2 held in London from 16-18 November 1992 (Oceanography Secretary); c) NSTF Heads of Delegation and ESG held in London from 9-12 February 1993 (Environment Secretary and Dr J.E. Portmann); d) NSTF QSR Drafting Group held at ICES Headquarters from 13-16 April 1993 (Environment Secretary, Oceanography Secretary, Fishery Secretary, Dr J.E. Portmann, and Ms M. Karlson); e) NSTF Heads of Delegation and QSR Drafting Group in London from 10-13 May 1993 (Chairman of ACME, Environment Secretary, and Dr J.E. Portmann).

The General Secretary and Environment Secretary attended the Third Follow-Up Meeting of the Third North Sea Conference held in Copenhagen from 1-3 December 1992 and also the Senior Officials Meeting for the Intermediate Ministerial Meeting on the North Sea also held in Copenhagen on 4 December 1992. The Environment Secretary attended the First Meeting of the Preparatory Working Group for the Intermediate Ministerial Meeting on the North Sea held in Copenhagen from 29-30 June.

2.3 Helsinki Commission (HELCOM)

The General Secretary represented the Council at the Fourteenth Meeting of HELCOM held in Helsinki from 2-5 February 1993. The Commission allocated funds to be paid to ICES for assistance in improving the quality of the historical Baltic Monitoring Programme (BMP) data base. All Baltic states were encouraged to support and participate in the work of the ICES Steering Group for the Coordination of the Baseline Study of Contaminants in Baltic Sea Sediments (C.Res.1992/2:41 and 4:8). The Commission was also informed that ICES had established the Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea (C.Res.1992/2:40) and the Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea (C.Res.1992/2:39). HELCOM agreed to support the ICES/HELCOM Workshop on Quality Assurance of Chemical Analytical Procedures for the Baltic Monitoring Programme to be held in Hamburg from 5-8 October 1993 (C.Res.1992/3:4).

Mr J.R. Larsen of the Secretariat attended a meeting in Stockholm on 11 November 1992 on the development of a Baltic Geographical Information System (GIS).

The Oceanography Secretary attended a meeting in Helsinki from 23-24 March 1993 with representatives of the HELCOM Secretariat and the Finnish Environmental Data Centre (EDC) regarding ICES assistance with quality control of the Commission's historical BMP data base being maintained by the EDC.

The Environment Secretary attended a meeting of HELCOM Committee Chairmen and Working Group Conveners held in Hamburg on 5 April 1993.

Scientific information and advice in response to requests from HELCOM were prepared by ACME at its June 1993 meeting and will be presented to the Commission's Environment Committee meeting to be held in Hamburg from 11-15 October 1993.

2.4 NEAFC

The Chairman of ACFM and General Secretary represented the Council at the Eleventh Annual Meeting of the North-East Atlantic Fisheries Commission (NEAFC) held in London from 18-19 November 1992. ACFM's advice on the status and management of the principal fish stocks in the NEAFC area was presented. No specific regulatory measures were adopted by the Commission. As in previous years, ICES was asked to provide the full range of scientific advice on the status of all fish stocks in the NEAFC area for 1993.

2.5 NASCO

Information and advice on the status and management of North Atlantic salmon and the compilation of tag releases in 1992 were prepared for the North Atlantic Salmon Conservation Organization (NASCO). The advice was prepared by ACFM at its May 1993 meeting based on the reports of the following meetings: a) Study Group on the North American Salmon Fisheries (Woods Hole, 15-19 February 1993) (C.Res.1992/2:8:3), b) Study Group on North-East Atlantic Salmon Fisheries (ICES Headquarters, 1-4 March 1993) (C.Res.1992/2:8:4), and c) Working Group on North Atlantic Salmon (ICES Headquarters, 5-12 March 1993) (C.Res.1992/2:8:5).

The ACFM advice on North Atlantic salmon was presented at the Tenth Annual Meeting of NASCO held in Edinburgh from 8-11 June 1993. The Council was represented at that meeting by the Chairman of ACFM, General Secretary, and Fishery Secretary.

The Ninth ICES Dialogue Meeting was held on 7-8 June immediately prior to the NASCO meeting, and was co-sponsored by NASCO.

2.6 IBSFC

Information and advice on the status and management of the stocks of cod, herring, sprat, and salmon in the Baltic were prepared for the International Baltic Sea Fishery Commission (IBSFC) at the May 1993 ACFM meeting. The basis for this advice was provided by the reports of the following meetings held at ICES Headquarters: a) Baltic Salmon and Trout Assessment Working Group (31 March - 7 April 1993) (C.Res.1992/2:8: 2), b) Working Group on the Assessment of Demersal Stocks in the Baltic (14-22 April 1993) (C.Res. 1992/2: 8:6), and c) Working Group on the Assessment of Pelagic Stocks in the Baltic (20-28 April 1993) (C.Res.1992/ 2:8:8).

This advice was presented to the Nineteenth Session of IBSFC held in Warsaw from 13-17 September 1993. ICES was represented at that meeting by the Chairman of ACFM and the Fishery Secretary.

At its Eighteenth Session in 1992, IBSFC agreed to be a co-sponsor of the Ninth ICES Dialogue Meeting on "Atlantic Salmon: A Dialogue" which was held on 7-8 June 1993 in Edinburgh in conjunction with the Tenth Annual Meeting of NASCO.

2.7 Commission of the EC (CEC)

As in previous years, a considerable amount of the Council's work was devoted to the preparation of scientific information and advice on the status of fish stocks and their management in response to requests from the CEC Directorate-General for Fisheries (DG XIV). An observer from DG XIV attended the November 1992 and May 1993 ACFM meetings.

The Secretariat will assume responsibility in the near future for a large data base established by the CEC's Scientific and Technical Committee for Fisheries (STCF) on disaggregated fleet data from the North Sea fisheries. This data base is currently under development by the Danish Institute for Fisheries and Marine Research.

Bi-lateral discussions were held in London on 17 November 1992 between representatives of DG XIV and ICES on various matters related to the cooperation between the two organizations.

Cooperation between the Secretariat and the CEC's MAST Data Committee (DG XII) increased. The Oceanography Secretary participated actively in meetings of the Committee (15-18 March 1993 in Brussels and 20-23 September in Dublin). The Secretariat was invited to tender bids for financial grants from MAST for data base projects.

There was also continued ICES cooperation with DG XII's Community Bureau of Reference and its programme on Quality Assurance of Measurements in the Marine Environment (QUASIMEME). The Council was represented at a meeting on this matter held in the Netherlands from 26-28 February 1993 by Dr W. Cofino (Netherlands).

3 MEETINGS AND OTHER ACTIVITIES ORGANIZED BY THE COUNCIL

3.1 Symposia

The Symposium on "Mass Rearing of Juvenile Fish" (Convener: Dr I. Huse, Norway) was held in Bergen from 21-23 June 1993 (C.Res.1990/2:4). A total of 37 papers and 48 posters were presented to an audience of 113 participants.

The Symposium on "Cod and Climate Change" (Convener: Mr J. Jakobsson, Iceland) was held in Reykjavik from 23-27 August 1993 (C.Res.1990/2:3). There were 220 participants and presentations of 48 papers and 32 posters.

The Symposium on "Fisheries and Plankton Acoustics" (Convener: Mr E.J. Simmonds, UK) will be held in Aberdeen from 12-16 June 1995 (C.Res.1991/2:1). The first announcement was distributed in the fall of 1992 and a second prospectus/call for papers will be issued in early 1994.

The Symposium on "Zooplankton Production - Measurement and Role in Global Ecosystems Dynamics and Biogeochemical Cycles" (Co-Conveners: Dr M. Reeve, USA and Mr H.-R. Skjoldal, Norway) will be held from 15-18 August 1994 (C.Res.1992/2:2). A scientific Steering Group has been established (Dr R. Harris, UK; Dr T. Kiørboe, Denmark; Dr J. Gamble, UK; and Dr E. S. Poulet, France) and a prospectus/call for papers was prepared and circulated in late July 1993.

The Symposium on "The Changes in the North Sea Ecosystem and their Causes: Århus 1975 Revisited" (Co-Conveners: Prof. H. Daan, Netherlands and Dr K. Richardson, Denmark) will be held in Århus for 4 days in July 1995 (C.Res.1992/2:1). A scientific Steering Group is in the process of being established, and a prospectus/call for papers will be prepared and circulated early in 1994.

A Symposium on "The Role of Marine Mammals in the Ecosystem", to be co-sponsored by ICES and NAFO, will be held in Dartmouth, NS, Canada from 6-8 September 1995, with Mr J. Sigurjónsson (Iceland) and Dr G. Stenson (Canada) as the Co-Conveners. Some preliminary publicity and announcement was prepared and circulated by the Co-Conveners in the summer of 1993.

3.2 Ninth Dialogue Meeting

The Ninth ICES Dialogue Meeting was held on 7-8 June 1993 in Edinburgh, Scotland in conjunction with the Tenth Annual Meeting of NASCO. The topic was "Atlantic Salmon: A Dialogue". The Meeting was co-sponsored by NASCO and the IBSFC, and financial assistance was provided by the Commission of the EC. Presentations were given by 14 different speakers representing scientific, managerial, and user points of view from both the North Atlantic and Baltic Sea areas. The Meeting was chaired by the President of ICES. The proceedings of the Meeting, including the papers prepared by the speakers, will be published in the *ICES Cooperative Research Report* series.

3.3 Bureau

The Bureau Working Group on Strategic Planning for Scientific Cooperation and Advice met at ICES Headquarters from 17-20 June.

The mid-term meeting of the Bureau was held at ICES Headquarters from 21-22 June 1993. All members were present as were the Chairman of the Consultative Committee, General Secretary, and two members of the Secretariat's Finance and Office Administration group.

A sub-group of the Bureau consisting of the President, First Vice-President, and Mr J. Møller Christensen met at ICES Headquarters on 31 August and 1 September for the purpose of interviewing candidates for the post of General Secretary.

The Bureau's second meeting in 1993 was held on 22 September in Dublin, Ireland immediately prior to the Statutory Meeting. All members, as well as the Chairman of the Consultative Committee and General Secretary, were present.

3.4 Advisory Committees

ACFM

ACFM held two meetings, both at ICES Headquarters, during the past year, the first from 27 October - 4 November 1992 (C.Res.1991/2:7) and the second from 18-26 May 1993 (C.Res.1992/2:8).

All members or their alternates were present at the first meeting, as well as the Fishery Secretary, the new Fishery Secretary designate (Dr R.S. Bailey), Mr H. Sparholt (part-time), and Mr L. Pedersen (part-time) from the Secretariat, the Chairman of the Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine, and Anchovy (Mr A. Eltink, part-time), and observers from the Commission of the EC (Mr D. Armstrong) and the Faroe Islands and Greenland Home Governments (Mr H. í Jákupsstovu and Mr H. Hovgård, both part-time). Information on the status of numerous fish and shellfish stocks and advice on their management were prepared and submitted to NEAFC and the Commission of the EC. The minutes of this meeting are contained in Doc. C.M.1993/A:2.

All members or their alternates were present at the second meeting, as well as the Fishery Secretary, Mr H. Sparholt (part-time), and Mr L. Pedersen (part-time) from the Secretariat, the Chairman of the Consultative Committee (part-time), the Chairmen of the Baltic Salmon and Trout Assessment Working Group (Mr C. Eriksson, part-time) and the Working Group on *Nephrops* and *Pandalus* Stocks (Dr N. Bailey, part-time), and observers from the Commission of the EC (Mr D. Armstrong) and the Faroe Islands and Greenland Home Governments (Mr H. í Jákupsstovu and Mr S.A. Pedersen, both part-time). Information on the status of numerous fish and shellfish stocks and advice on their management were prepared and submitted to NASCO, IBSFC, NEAFC, the Commission of the EC, and the Governments of Germany and Sweden. The minutes of this meeting are contained in Doc. C.M.1993/A:3.

ACME

The first meeting of the newly-structured ACME was held at ICES Headquarters from 1-11 June 1993 (C.Res. 1992/2:33). All members or their alternates were present (for at least part of the meeting) except Dr J. McDowell Capuzzo (USA). The Environment Secretary, Oceanography Secretary, and Chairman of the Consultative Committee also attended the meeting. The Committee devoted the meeting to a) reviewing the North Sea Task Force Quality Status Report, b) preparing information and advice on various aspects of marine environmental quality for OSPARCOM and HELCOM, and c) developing a first draft of a strategic framework for ACME. The minutes of this meeting are contained in Doc. C.M.1993/A:4. The ACME Report will be published in the *ICES Cooperative Research Report* series.

3.5 Consultative Committee

A special mid-term meeting of the Consultative Committee (Chairman: Prof. C.C.E. Hopkins, Norway) was held at ICES Headquarters from 14-16 June 1993 (C.Res. 1992/2:3). All members of the Committee were in attendance as were the General Secretary, Environment Secretary, Fishery Secretary, Oceanography Secretary, and President. The report of the meeting was presented in Doc. C.M.1993/Gen:4.

3.6 Working/Study Group Meetings and Workshops

The meetings of about 75 Working, Study, and other Groups and Workshops specified in C.Res.1992/2:4 - 2:56 were held during the period 1 November 1992 - 31

October 1993. In addition, eight other Groups worked by correspondence. A list of these meetings is given in Annex 2. Particular attention is drawn to the following Groups:

a) The Study Group on Environmental Modelling of the Baltic Sea (Chairman: Dr F. Wulff, Sweden) decided to work by correspondence in 1993 rather than meet for 3 days in spring 1993 (C.Res.1992/2:38).

b) A Sub-Group of the Working Group on Pathology and Diseases of Marine Organisms, which met at ICES Headquarters from 11-13 March 1993 (C.Res.1992/2:47) was chaired by Dr A.D. Vethaak (Netherlands) instead of Dr J. Thulin (Sweden), who was unable to attend the full meeting.

c) Prof. D.S. Butterworth (South Africa) was appointed Chairman of the new Study Group on Long-Finned Pilot Whales (C.Res.1992/2:31). The Group met at ICES Headquarters from 30 August - 3 September 1993.

d) Mr D. Latrouite (France) was appointed Chairman of the new Study Group on the Biology, Life History, and Assessment of *Majid* Crabs (C.Res. 1992/2:25). The Group met in Jersey, Channel Islands, UK from 19-21 May 1993.

e) A meeting of the Joint ICES/NAFO Working Group on Harp and Hooded Seals (Chairman: Mr F. Kapel, Denmark) was held in Copenhagen at the Greenland Fisheries Institute from 15-21 September 1993. This meeting was authorized by the President in response to a request for advice from the Government of Norway.

4 SECRETARIAT MATTERS

4.1 Staffing

The total number of people employed in the Secretariat on a permanent, fixed-term, or temporary basis during the past year was 38. Those people occupied 9 permanent or fixed-term and 2 temporary, part-time posts at the Professional level, and 18 permanent, 2 one-year, and 4 temporary, part-time posts at the General Service level.

Dr Emory D. Anderson announced his resignation as General Secretary (D.2) effective 31 July 1993, but continued to serve until January 1994. Prof. Christopher C.E. Hopkins, appointed by the Council at the 1993 Statutory Meeting as the new General Secretary, took over the duties of the post on 3 January 1994. Dr Anderson had been appointed General Secretary at the 1988 Statutory Meeting and assumed the post in April 1989.

Dr Richard Grainger vacated the post of Fishery Secretary (P.5) effective 30 November 1992 and was replaced by Dr Roger S. Bailey on 4 January 1993.

Ms Karen Schrader retired on 31 January 1993 as Senior Administrative Secretary (C.7) in charge of the Finance and Office Administration group following 17 years of employment with the Secretariat. She was replaced by Ms Jytte Andersen-Rosendal who began work on 11 January 1993.

Ms Melodie Karlson was appointed, effective 4 January 1993, to a post of Environment Assistant (C.3) under the supervision of the Environment Secretary. The appointment was for one year, subject to extension. At its June 1993 mid-term meeting, the Bureau authorized the conversion of Ms Karlson's post to a permanent, full-time position.

Ms Else Juul Nielsen, who was initially given a one-year appointment on 1 November 1991 to a post of Temporary Assistant (C.3) under the supervision of the Oceanography Secretary, was reappointed on 1 November 1992 for a second year. She had been working primarily on a data archaeology project funded in part by a grant from the University Corporation for Atmospheric Research in Colorado (USA). At its June 1993 mid-term meeting, the Bureau authorized the conversion of Ms Nielsen's post to a permanent, full-time position.

Mr Arne Facius and Mr Morten Vinther continued their temporary, part-time employment (P.1), under the supervision of the Fishery Secretary, to provide computer programming assistance in the ongoing development of the ICES fisheries assessment package (IFAP) and the International Bottom Trawl Survey (IBTS) data base.

Mr Kenneth H. Brøndum and Ms Elizabeth C. Tangney were employed briefly in temporary, part-time capacities (C.4 and C.2, respectively), under the supervision of the Environment Secretary, to provide assistance in computer programming and data entry, respectively, in support of data handling.

Ms Michala Ovens was employed as a temporary, part-time assistant (C.3) mainly for the Librarian/Information Officer, but also for the Environment and Fishery Secretaries. She was on a six-month maternity leave from 15 February - 13 August 1993, during which time her duties were handled by Ms Marianne Wilsen (C.1).

Ms Kay McCarthy was employed on a temporary, part-time basis (C.4) in the Meeting Organization and Documentation group in August-September 1993 to provide assistance in preparing for the 1993 Statutory Meeting.

Mr Kim Winther Andersen and Ms Margit Winther Andersen were employed, as of 1 November 1993, as permanent, part-time custodians for ICES Headquarters.

4.2 Conditions of Service for Staff Members

A change in the Secretariat's Staff Rules regarding maternity/paternity leave was approved by the Bureau at its June 1993 mid-term meeting.

A restriction on smoking at ICES Headquarters was imposed by the Bureau at its June 1993 mid-term meeting. Under this restriction, smoking is not permitted in any public areas of the Secretariat, staff members are permitted to smoke in their own offices with closed doors, and smoking by participants at Working/Study Group and other meetings is restricted to two designated rooms, one on the first floor and one in the basement.

Efforts initiated about four years ago by the international organizations located in Copenhagen, including ICES (with the World Health Organization assuming the lead role on behalf of all the other organizations) to obtain an exemption from Danish taxation of pension benefits for their staff members are still in progress. A formal presentation will eventually be made on this matter to the Minister of Foreign Affairs.

4.3 Office Facilities and Equipment

Various improvements were made to the Headquarters facilities in the past year. An exhaust system was installed in the photocopy room to vent the noxious fumes from two photocopiers, a laser printer, a plotter, and a telefax machine. The cooling system that had previously been situated in one of the basement rooms to cool the old Norsk Data computer was removed, and a new cooling unit was installed for the main server of the new computer system housed in a room on the second floor. The basement room which previously contained the Norsk Data computer was converted into a storage area.

New chairs were purchased for the lunch room on the third floor and a new conference table and chairs were purchased for the Bureau Room.

Following approval of the Council at the 1993 Statutory Meeting, the two workstations in the Secretariat's computer system were upgraded to HP9000/700 machines. Additional equipment for the system was also acquired, including several PCs, additional disk and memory capacity, and various software packages.

5 PUBLICATIONS

Activities with respect to publications during the past year are summarized below. Additional information is given in C.M.1993/Pub:2 and other documents for the Publications Committee.

5.1 ICES Journal of Marine Science

Volume 49(4), pages 379-466, of the *ICES Journal of Marine Science*, scheduled for publication in November 1992, was printed in mid-December. This issue completed the first volume to appear as a quarterly since Volume 1 was published in 1926. The final page count of 466 was 46 less than the original allotment of 512 for the volume, thus continuing to reflect the reduction, which was noted in the spring of 1992, in the number of papers being submitted for publication.

Subscription rates for Volume 49 were GBP 90.00 or USD 154.00 for institutional subscriptions and GBP 45.00 or USD 77.00 for personal subscriptions.

Volume 50(1), pages 1-102, scheduled for February 1993, was issued in late March.

Volume 50(2), pages 103-232, was off press at the end of May 1993 and thus matched its cover date. This issue contained a paper by K. Mann based on his Open Lecture at the 1992 Statutory Meeting.

Volume 50(3), published in August 1993, included an obituary for former General Secretary Dr Basil Parrish written by the Editor.

Volume 50(4) was published in November 1993. Fifteen papers, including four from the Mini-Symposium on "Ecosystem Modelling as a Tool to Predict Pollution-Associated Risks for the Marine Environment" held during the 1992 Statutory Meeting, were included. This issue was larger than any of the earlier numbers in the volume, compensating in part for the earlier shortfall in the page budget.

Subscription rates for Volume 50 are GBP 96.00 or USD 170.00 for institutional subscriptions and GBP 48.00 or USD 85.00 for personal subscriptions.

5.2 ICES Marine Science Symposia

Volume 195 of the *ICES Marine Science Symposia* series, "Hydrobiological Variability in the ICES Area, 1980-1989", 514 pages and based on a Symposium held in Mariehamn in June 1991, was published in December 1992. It was issued as a "Festschrift" in honour of the 70th birthdays of five eminent scientists with strong links with ICES. The manuscripts were submitted to the Secretariat during the winter-summer period of 1992, with the 49th and final one arriving in September 1992. A price reduction of about GBP 1,000 on typesetting costs was negotiated, based on the high page count of the volume.

Volume 196, "Fish Behaviour in Relation to Fishing Operations", 215 pages and based on a Symposium held in Bergen in June 1992, was published in April 1993. The

Scientific Editor and Technical Editor, engaged to assist the former, introduced and implemented a system of rapid processing of the papers. Most of them were submitted to the Secretariat within six months after the Symposium.

Volume 197, "Measurement of Primary Production from the Molecular to the Global Scale", 287 pages and based on a Symposium held in La Rochelle in April 1992, was published in early August 1993. It contains 24 papers based on presentations at the Symposium by invited lecturers and 53 abstracts based on poster presentations.

The proceedings of the Symposium on "Shellfish Life Histories and Shellfishery Models", held in Moncton, New Brunswick, Canada in June 1990, are in different stages of preparation. The original Scientific Editor (Symposium Convener) resigned at the 1992 Statutory Meeting and new Co-Editors were appointed in October 1992. The new editorial team, with some difficulty, had compiled a list of 79 papers or extended abstracts. Of this number, approximately two-thirds are ready or nearly ready for submission to the Secretariat, and the balance either withdrawn or rejected. A number of editorial matters remain unresolved, and a publication date has not yet been set.

Papers and posters presented at the Symposium on "Mass Rearing of Juvenile Fish", held in Bergen in June 1993, are in various stages of editorial preparation. It is the intention of the Editors to deliver the manuscripts to the Secretariat during the spring of 1994 so that the volume can be published by the end of 1994. Continuing the trend begun with Volume 196, the proceedings will not be edited by the Symposium Convener, but by other experts, including members of the Steering Committee.

Preparations for the editing and publication of papers and posters presented at the Symposium on "Cod and Climate Change", held in Reykjavik in August 1993, are in progress.

The Council approved a proposal at the 1993 Statutory Meeting to publish proceedings of future ICES Symposia as extra issues in the *ICES Journal of Marine Science*. This arrangement is intended to take effect in 1995 and will result in the discontinuation of the *ICES Marine Science Symposia* series as the sole means of publishing papers stemming from ICES Symposia.

5.3 ICES Cooperative Research Reports

The following eight *ICES Cooperative Research Reports* were published during the past year:

No. 182 Effects of Extraction of Marine Sediments on Fisheries; issued in December 1992.

No. 186 Report on the Eighth Dialogue Meeting, 13-14 September 1991; issued in March 1993.

No. 189 ICES Seventh Round Intercalibration for Trace Metals in Biological Tissue ICES 7/TM/BT (Part 2); issued in November 1992.

No. 190 Report of the ICES Advisory Committee on Marine Pollution, 1992; issued in December 1993.

No. 191 Reports of the Working Group on Methods of Fish Stock Assessments; issued in January 1993.

No. 192 Report of the Baltic Salmon Scale Reading Workshop; issued in January 1993.

No. 193 Reports of the ICES Advisory Committee on Fishery Management 1992 (Parts 1 and 2); issued in February 1993.

No. 194 Atlas of North Sea Fishes; issued in September 1993.

The "Atlas of North Sea Fishes" (No. 194) was published as a special number in this series. The cover was a variation on the basic design for the series in order to reflect its nature as a special publication. Financial support was received from the Commission of the EC.

Selected papers presented at the Symposium on "Patchiness in the Baltic Sea", held in Mariehamn in June 1991, will also be published as a special number in this series rather than as a volume in the *ICES Marine Science Symposia* series. The Secretariat had received the text of the 18 papers to be included, along with several illustrations which will require a substantial amount of work before they are ready for publication. Other work priorities in the Secretariat have resulted in delays in completing work on this project, but it is expected that further progress will be made as soon as possible.

5.4 ICES Fisheries Statistics

Volume 73 of the *ICES Fisheries Statistics* (data for 1988) was published in November 1992. The data for Volume 74 (1989) are all available except those from Spain.

5.5 Oceanographic Data Lists and Inventories

No numbers in this series were published this year.

5.6 ICES Identification Leaflets for Plankton

Nos. 178, 179, and 180, issued in July 1992, are the last to be published in this series. The Secretariat has re-

ceived a manuscript on *Prorocentrum* and is awaiting others before proceeding. Several authors have indicated to the Editor that they are preparing additional manuscripts for publication.

5.7 ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish

Nos. 41-50, dated 1991 and issued in January 1992, are the last set published in this series. The Working Group on Pathology and Diseases of Marine Organisms, at its March 1993 meeting, recommended that this series should be continued, but should be issued in sets of three or four, instead of 10, as has been the previous practice. The Editor has collected six manuscripts which are being edited and translated.

5.8 Techniques in Marine Environmental Sciences

Nos. 13-16, published in 1991, are the most recent to be published in this series. The Editor has received or expects to receive manuscripts on the determination of nutrients in sea water and on basic statistical theory of pooling strategies for monitoring contaminant trends in marine organisms. A third, tentatively entitled "Training Guide for the Identification of Common Diseases and Parasites of Fish in the North Atlantic", is expected to be published as a special number. The authors have indicated that the text is nearly ready for copy-editing and that 34 colour photographs and proposals for the layout will be submitted soon to the Secretariat.

The Council approved a proposal at the 1993 Statutory Meeting that the title of the series should be preceded by "*ICES*" to provide consistency with all the other titles of the ICES publications.

5.9 ICES Annual Report

The *ICES Annual Report* for 1992 was issued in January 1993.

5.10 ICES/CIEM Information

Number 21 of this newsletter was issued in March 1993 and Number 22 was issued in early September.

ANNEX 1

MEETINGS AT WHICH ICES WAS REPRESENTED BY OBSERVERS

1. Seventh Meeting of the North Sea Task Force Experts Steering Group (ESG), Bergen, Norway, 2 November 1992. ICES representative: Environment Secretary.

2. Ninth Meeting of the North Sea Task Force (NSTF), Bergen, Norway, 3-6 November 1992. ICES representatives: Chairman of ACME, Dr J.E. Portmann (NSTF Vice-Chairman), Environment Secretary, and Oceanography Secretary.

3. Eighth Special Meeting of the International Commission for the Conservation of Atlantic Tunas (ICCAT), Madrid, Spain, 9-13 November 1992. ICES representative: Mr R. Robles.

4. Meeting on Baltic Geographical Information System, Stockholm, Sweden, 11 November 1992. ICES representative: Mr J.R. Larsen.

5. Meeting of North Sea Task Force Drafting Panel for QSR Chapter 2, London, England, 16-18 November 1992. ICES representative: Oceanography Secretary.

6. Meeting between ICES and Commission of EC (DG XIV), London, England, 17 November 1992. ICES representatives: President, General Secretary, Chairman of ACFM, Fishery Secretary, and new Fishery Secretary designate.

7. Eleventh Annual Meeting of the North-East Atlantic Fisheries Commission (NEAFC), London, England, 18-19 November 1992. ICES representatives: General Secretary, Chairman of ACFM, and Fishery Secretary.

8. Second Meeting of Arctic Monitoring and Assessment Programme (AMAP) Task Force, Toronto, Canada, 29 November - 4 December 1992. ICES representative: Dr R. Sætre.

9. IOC International Oceanographic Data and Information Exchange (IODE) meeting, Paris, France, 30 November - 9 December 1992. ICES representative: Oceanography Secretary.

10. Tenth Meeting of the *Ad Hoc* Working Group on Monitoring of the Oslo and Paris Commissions, ICES Headquarters, 30 November - 11 December 1992. ICES representatives: Environment Secretary, Mr J.R. Larsen, and Ms M. Sørensen.

11. Third Follow-Up Meeting of the Third North Sea Conference, Copenhagen, Denmark, 1-3 December 1992. ICES representatives: General Secretary and Environment Secretary.

12. Meeting of Chairmen and Vice-Chairmen (CVC) of the Oslo and Paris Commissions, London, England, 2 December 1992. ICES representative: General Secretary.

13. Senior Officials Meeting for the Intermediate Ministerial Meeting on the North Sea, Copenhagen, Denmark, 4 December 1992. ICES representatives: General Secretary and Environment Secretary.

14. Meeting of representatives of ICES and Oslo and Paris Commissions, ICES Headquarters, 12-13 January 1993. ICES representatives: General Secretary and Environment Officer.

15. Second Meeting of the North Atlantic Marine Mammal Commission (NAMMCO), Tromsø, Norway, 19-20 January 1993. ICES representatives: General Secretary and Chairman of Consultative Committee.

16. Eighteenth Meeting of the Joint Monitoring Group (JMG) of the Oslo and Paris Commissions, The Hague, Netherlands, 25-29 January 1993. ICES representatives: Chairman of ACME, Environment Secretary, and Mr J.R. Larsen.

17. Fourteenth Meeting of the Baltic Marine Environment Protection Commission (HELCOM), Helsinki, Finland, 2-5 February 1993. ICES representative: General Secretary.

18. Meeting of North Sea Task Force Heads of Delegation, London, England, 9 February 1993. ICES representatives: Environment Secretary and Dr J.E. Portmann.

19. Eighth Meeting of the North Sea Task Force Experts Steering Group (ESG), London, England, 10-12 February 1993. ICES representatives: Environment Secretary and Dr J.E. Portmann.

20. Meeting on Data Archaeology and Rescue, Washington, DC, 14 February 1993. ICES representative: Oceanography Secretary.

21. Meeting of Chairmen and Vice-Chairmen (CVC) of the Oslo and Paris Commissions, London, England, 17 February 1993. ICES representative: General Secretary.

22. Seventeenth Session of the Intergovernmental Oceanographic Commission (IOC) Assembly, Paris, France, 25 February - 11 March 1993. ICES representative: General Secretary.

23. Meeting on Quality Assurance of Measurements in the Marine Environment programme (QUASIMEME) of the Commission of the EC's Community Bureau of Reference (BCR), Netherlands, 26-28 February 1993. ICES representative: Dr W. Cofino.

24. Tenth Meeting of the North Sea Task Force (NSTF), The Hague, Netherlands, 2-5 March 1993. ICES representatives: Chairman of ACME, Dr J.E. Portmann (NSTF Vice-Chairman), Environment Secretary, Oceanography Secretary, Prof. N. Daan, and Mr H. Gislason.

25. Meetings of the Steering Committee for Study of the Danish Fish Meal and Fish Oil Industry, Copenhagen, Denmark, 5 March, 5 May, and 1 September 1993. ICES representative: Fishery Secretary.

26. Meeting of the MAST Data Committee of the Commission of the EC (DG XII), Brussels, Belgium, 15-18 March 1993. ICES representative: Oceanography Secretary.

27. Meeting of FAO Committee on Fisheries, Rome, Italy, 15-19 March 1993. ICES representative: Dr Z.S. Karnicki.

28. Third Joint Meeting of the Standing Advisory Committee on Scientific Advice (SACSA) of the Oslo Commission and the Technical Working Group (TWG) of the Paris Commission, Oslo, Norway, 18-19 March 1993. ICES representative: Environment Secretary.

29. Meeting of representatives of HELCOM, ICES, and Finnish Environmental Data Centre, Helsinki, Finland, 23-24 March 1993. ICES representative: Oceanography Secretary.

30. Meeting of the HELCOM Environment Committee (EC) Chairman and Conveners of EC Working Groups, Hamburg, Germany, 5 April 1993. ICES representative: Environment Officer.

31. Meeting of North Sea Task Force QSR Drafting Group, ICES Headquarters, 13-16 April 1993. ICES representatives: Dr J.E. Portmann, Environment Secretary, Oceanography Secretary, Fishery Secretary, and Ms. M. Karlson.

32. Meeting of North Sea Task Force Heads of Delegation, London, England, 10-12 May 1993. ICES representatives: Chairman of ACME, Environment Secretary, and Dr J.E. Portmann.

33. Forty-Fifth Annual Meeting of the International Whaling Commission (IWC), Japan, 10-14 May 1993. ICES representative: Dr T. Smith.

34. Meeting of North Sea Task Force QSR Drafting Group, London, England, 13 May 1993. ICES representatives: Environment Secretary and Dr J.E. Portmann.

35. Meeting of IOC Group of Experts on the Technical Aspects of Data Exchange (GETADE), ICES Headquarters, 11-14 May 1993. ICES representatives: Oceanography Secretary and Mr G. Hopwood.

36. IOC Regional Archaeology and Data Rescue Workshop, Obninsk, Russia, 17-21 May 1993. ICES representative: Oceanography Secretary.

37. Meeting of the IOC Ocean-PC Project Working Group, ICES Headquarters, 24-25 May 1993. ICES representatives: Oceanography Secretary and Mr G. Hopwood.

38. Tenth Annual Meeting of the North Atlantic Salmon Conservation Organization (NASCO), Edinburgh, Scotland, 8-11 June 1993. ICES representatives: General Secretary, Chairman of ACFM, and Fishery Secretary.

39. Fifteen Joint Meeting of the Oslo and Paris Commissions, Berlin, Germany, 14-19 June 1993. ICES representative: Environment Secretary.

40. Eleventh Meeting of the North Sea Task Force (NSTF), Edinburgh, Scotland, 22-25 June 1993. ICES representatives: Chairman of ACME, Dr J.E. Portmann (NSTF Vice-Chairman), Environment Secretary, Oceanography Secretary, and Fishery Secretary.

41. First Meeting of the Preparatory Working Group for the Intermediate Ministerial Meeting on the North Sea, Copenhagen, Denmark, 29-30 June 1993. ICES representative: Environment Secretary.

42. Third Meeting of the North Atlantic Marine Mammal Commission (NAMMCO), Reykjavik, Iceland, 1-2 July 1993. ICES representative: Mr J. Sigurjónsson.

43. Meeting of Baltic Marine Biologists Committee, Riga, Latvia, 1-4 September 1993. ICES representative: Dr L. Hernroth.

44. Meeting of the Working Group on Nutrients of the Paris Commission, Gothenburg, Sweden, 13-17 September 1993. ICES representative: Oceanography Secretary.

45. Nineteenth Session of the International Baltic Sea Fishery Commission (IBSFC), Warsaw, Poland, 13-17 September 1993. ICES representatives: Chairman of ACFM and Fishery Secretary.

46. Meeting of the MAST Data Committee of the Commission of the EC (DG XII), Dublin, Ireland, 20-23 September 1993. ICES representative: Oceanography Secretary.

47. *Ad Hoc* Interagency Consultations of the Coordinating Working Party on Fishery Statistics (CWP), Dublin, Ireland, 21 September 1993. ICES representative: Fishery Secretary and Chairman of Statistics Committee.

48. Meeting of SCOR Executive Committee, Qingdao, China, 28-30 September 1993. ICES representative: Prof. B. Rothschild.

49. European Environmental Research Organization (EERO) Symposium on "European Coastal Seas: from Science to Management", Barcelona, Spain, 4-6 October 1993. ICES representative: Mr S. Carlberg.

50. Second Meeting of the Preparatory Working Group for the Intermediate Ministerial Meeting on the North Sea, Copenhagen, Denmark, 11-13 October 1993. ICES representative: Environment Secretary.

51. Fourth Meeting of the HELCOM Environment Committee, Hamburg, Germany, 11-15 October 1993. ICES representative: Environment Secretary.

52. Second Meeting of the IOC-FAO *Ad Hoc* Intergovernmental Panel on Harmful Algal Blooms, Paris, France, 14-16 October 1993. ICES representative: Ms B. Reguera.

53. Preliminary meeting on the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas, Cambridge, England, UK, 18-19 October 1993. ICES representative: Dr J. Harwood.

54. Second Annual Meeting of the North Pacific Marine Science Organization (PICES), Seattle, WA, USA, 25-30 October 1993. ICES representative: Mr J. Beckett.

ANNEX 2

ICES WORKING GROUP AND STUDY GROUP MEETINGS IN 1992/1993

Consultative Committee

1. Working Group on Cod and Climate Change
(C.Res.1992/2:7)
Chairman: Dr K. Brander
Held in Lowestoft, United Kingdom, 7-11 June 1993.
Countries represented: Canada, Denmark, Japan, Netherlands, Norway, United Kingdom, USA.
Report available as Doc. C.M. 1993/G:3.

2. Steering Group on Fisheries/Environmental Management Objectives and Supporting Research Programmes in the Baltic Sea
(C.Res.1992/2:5)
Chairman: Dr S. Karnicki
Held in Copenhagen, 17-18 June 1993.
Countries represented: Finland, Germany, Norway, Poland, Sweden, USA.
Report available as Doc. C.M. 1993/J:3.

3. Study Group on Long-Finned Pilot Whales
(C.Res.1992/2:31)
Chairman: Prof. D. Butterworth
Held in Copenhagen, 30 August - 3 September 1993.
Countries represented: Denmark, Faroe Islands, Iceland, Norway, South Africa, USA.
Report available as Doc. C.M. 1993/N:5.

4. Inter-Committee Recruitment Group
(C.Res.1992/2:6)
Chairman: Dr M. Sissenwine
Held in Dublin during Statutory Meeting.
Report available as Doc. C.M. 1993/L:4.

Advisory Committee on Fishery Management

5. Working Group on Long-Term Management Measures
(C.Res.1992/2:8:22)
Chairman: Dr T. Stokes
Held in Copenhagen, 19-28 January 1993.
Countries represented: Canada, Denmark, France, Netherlands, Norway, United Kingdom.
Report available as Doc. C.M. 1993/Assess:7.

6. Planning Group for the Development of Multispecies, Multifleet Assessment Tools
(C.Res.1992/2:8:20)
Chairman: Mr P. Sparre
Held in Copenhagen, 29 January - 1 February 1993.
Countries represented: Denmark, France, Netherlands, Norway, United Kingdom.
Report available as Doc. C.M. 1993/Assess:8.

7. Working Group on Methods of Fish Stock Assessment
(C.Res.1992/2:8:21)
Chairman: Dr G. Stefánsson
Held in Copenhagen, 3-10 February 1993.
Countries represented: Canada, Denmark, France, Germany, Iceland, Netherlands, Norway, Russia, Spain, United Kingdom, USA.
Report available as Doc. C.M. 1993/Assess:12.

28. Study Group on North American Salmon Fisheries
(C.Res.1992/2:8:3)
Chairman: Dr P. Rago
Held in Woods Hole, MA, USA, 15-19 February 1993.
Countries represented: Canada, USA.
Report available as Doc. C.M. 1993/Assess:9.

9. Working Group on *Nephrops* and *Pandalus* Stocks
(C.Res.1992/2:8:1)
Chairman: Dr N. Bailey
Held in Ostende, Belgium, 24 15-19 February 1993.
Countries represented: Belgium, Denmark, France, Ireland, Norway, Spain, Sweden, United Kingdom.
Report available as Doc. C.M. 1993/Assess:11.

10. Study Group on North-East Atlantic Salmon Fisheries
(C.Res.1992/2:8:4)
Chairman: Dr E.C.E. Potter
Held in Copenhagen, 1-4 March 1993.
Countries represented: Faroe Islands, Finland, France, Iceland, Ireland, Norway, Russia, Sweden, United Kingdom.
Report available as Doc. C.M. 1993/Assess:13.

11. Working Group on North Atlantic Salmon
(C.Res.1992/2:8:5)
Chairman: Dr K. Friedland
Held in Copenhagen, 5-12 March 1993.
Countries represented: Canada, Denmark, Finland, France, Iceland, Ireland, Norway, Russia, Sweden, United Kingdom.
Report available as Doc. C.M. 1993/Assess:10.

12. Herring Assessment Working Group for the Area South of 62°N
(C.Res.1992/2:8:7)
Chairman: Mr O. Hagström
Held in Copenhagen, 22 March - 2 April 1993.
Countries represented: Canada, Denmark, France, Ireland, Netherlands, Sweden, United Kingdom, USA.
Report available as Doc. C.M. 1993/Assess:15.

13. Baltic Salmon and Trout Assessment Working Group
(C.Res.1992/2:8:2)
Chairman: Mr C. Eriksson
Held in Copenhagen, 31 March - 7 April 1993.
Countries represented: Denmark, Estonia, Finland, Latvia, Poland, Sweden.
Report available as Doc. C.M. 1993/Assess:14.

14. Working Group on the Assessment of Demersal Stocks in the Baltic
(C.Res.1992/2:8:6)
Chairman: Mr E. Aro
Held in Copenhagen, 14-22 April 1993.
Countries represented: Denmark, Finland, Germany, Latvia, Poland, Sweden, Russia.
Report available as Doc. C.M. 1993/Assess:16.

15. Working Group on the Assessment of Pelagic Stocks in the Baltic
(C.Res.1992/2:8:8)
Chairman: Dr O. Rechlin
Held in Copenhagen, 20-28 April 1993.
Countries represented: Denmark, Estonia, Finland, Germany, Latvia, Poland, Sweden, Russia.
Report available as Doc. C.M. 1993/Assess:17.

16. North-Western Working Group
(C.Res.1992/2:8:10)
Chairman: Dr S. Schopka
Held in Copenhagen, 3-11 May 1993.
Countries represented: Canada, Faroe Islands, Germany, Greenland, Iceland, Norway, Russia.
Report available as Doc. C.M. 1993/Assess:18.

17. Working Group on the Assessment of Northern Shelf Demersal Stocks
(C.Res.1992/2:8:15
Chairman: Dr P.A. Kunzlik
Held in Aberdeen, Scotland, 15-24 June 1993.
Countries represented: Belgium, Faroe Islands, France, Ireland, Netherlands, United Kingdom.
Report available as Doc. C.M. 1993/Assess:20.

18. Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine, and Anchovy
(C.Res.1992/2:8:9)
Chairman: Mr A. Eltink
Held in Copenhagen, 22 June - 2 July 1993.
Countries represented: France, Ireland, Netherlands, Portugal, Russia, Spain, United Kingdom.
Report available as Doc. C.M. 1993/Assess:19.

19. Working Group on Multispecies Assessment of Baltic Fish
(C.Res.1992/2:8:11)
Chairman: Mr B. Sjöstrand
Held in Copenhagen, 17-26 August 1993.
Countries represented: Denmark, Germany, Latvia, Russia, Sweden.
Report available as Doc. C.M. 1994/Assess:1.

20. Arctic Fisheries Working Group
(C.Res.1992/2:8:13)
Chairman: Mr K. Sunnanå
Held in Copenhagen, 30 August - 2 September 1993.
Countries represented: Canada, Germany, Greenland, Norway, Russia, Spain.
Report available as Doc. C.M. 1994/Assess:2.

21. Working Group on the Assessment of Southern Shelf Demersal Stocks
(C.Res.1992/2:8:16)
Chairman: Mr B. Mesnil
Held in Copenhagen, 6-15 September 1993.
Countries represented: Belgium, France, Ireland, Portugal, Spain, United Kingdom.
Report available as Doc. C.M. 1994/Assess:3.

22. Blue Whiting Assessment Working Group
(C.Res.1992/2:8:12)
Chairman: Mr J.A. Jacobsen
Held in Tórshavn, Faroe Islands, 8-14 September 1993.
Countries represented: Faroe Islands, Norway, Russia, Spain.
Report available as Doc. C.M. 1994/Assess:4.

23. Joint ICES/NAFO Working Group on Harp and Hooded Seals
(Meeting authorized by the President)
Chairman: Mr F.O. Kapel
Held in Copenhagen, 15-21 September 1993.
Countries represented: Canada, Denmark, Norway, Russia, USA.
Report available as Doc. C.M. 1994/Assess:5.

24. Working Group on the Assessment of Norway Pout and Sandeel
(C.Res.1992/2:8:17
Chairman: Mr D. Skagen
Held in Copenhagen, 6-12 October 1993.
Countries represented: Denmark, Norway, United Kingdom.
Report available as Doc. C.M. 1994/Assess:7.

25. Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak
(C.Res.1992/2:8:14)
Chairman: Dr R.M. Cook
Held in Copenhagen, 7-15 October 1993.
Countries represented: Belgium, Canada, Denmark, France, Germany, Netherlands, Norway, Sweden, United Kingdom.
Report available as Doc. C.M. 1994/Assess:6

26. Atlanto-Scandian Herring and Capelin Working Group
(C.Res.1992/2:8:18
Chairman: Mr H. í Jakupsstovu
Held in Copenhagen, 18-22 October 1993.
Countries represented: Canada, Faroe Islands, Greenland, Iceland, Norway, Russia.
Report available as Doc. C.M. 1994/Assess:8.

27. Multispecies Assessment Working Group
(C.Res.1992/2:8:19)
Chairman: Dr J. Rice
Held in Copenhagen, 23 November - 2 December 1993.
Countries represented: Australia, Canada, Denmark, Germany, Greenland, Netherlands, Norway, United Kingdom.
Report available as Doc. C.M. 1994/Assess:9.

Advisory Committee on the Marine Environment

28. Marine Chemistry Working Group
(C.Res.1992/2:33:1)
Chairman: Mr W. Cofino
Held in Ottawa, Canada, 8-13 February 1993.
Countries represented: Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Iceland, Netherlands, Norway, Portugal, Spain, Sweden, United Kingdom, USA.
Report available as Doc. C.M. 1993/Env:1.

29. Working Group on Environmental Assessment and Monitoring Strategies
(C.Res.1992/2:33:5)
Chairman: Mr S. Carlberg
Held in Copenhagen, 22-26 February 1993.
Countries represented: Denmark, France, Netherlands, Sweden, United Kingdom.
Report available as Doc. C.M. 1993/Env:5.

30. Working Group on Biological Effects of Contaminants
(C.Res.1992/2:33:3)
Chairman: Dr R. Addison
Held in Charlottenlund, Denmark, 31 March - 2 April 1993.
Countries represented: Belgium, Canada, France, Germany, Netherlands, Sweden, United Kingdom, USA.
Report available as Doc. C.M. 1993/Env:3.

31. Working Group on Marine Sediments in Relation to Pollution
(C.Res.1992/2:33:2)
Chairman: Dr S. Rowlatt
Held in Charlottenlund, Denmark, 31 March - 3 April 1993.
Countries represented: Canada, Germany, Netherlands, Norway, Spain, Sweden, United Kingdom.
Report available as Doc. C.M. 1993/Env:2.

32. Working Group on the Statistical Aspects of Environmental Monitoring
(C.Res.1992/2:33:6)
Chairman: Dr J.F. Uthe
Held in Copenhagen, 27-30 April 1993.
Countries represented: Canada, Denmark, France, Netherlands, Norway, Sweden, United Kingdom.
Report available as Doc. C.M. 1993/Env:6.

33. Working Group on Phytoplankton and the Management of their Effects
(C.Res.1992/2:33:7)
Chairman: Dr K. Jones
Held in Copenhagen, 28-30 April 1993.
Countries represented: Canada, Finland, France, Iceland, Netherlands, Norway, Sweden, United Kingdom.
Report available as Doc. C.M. 1993/Env:7.

Fish Capture Committee

34. Study Group on Target Strength Methodology
(C.Res.1992/2:11)
Chairman: Mr E. Ona
Held in Gothenburg, Sweden, 19 April 1993.
Preliminary Report available as Doc. C.M. 1993/B:6.

35. Study Group on Research Vessel Noise Management
(C.Res.1992/2:12)
Chairman: Mr R.B. Mitson
Held in Gothenburg, Sweden, 19 April 1993.
Countries represented: Canada, Denmark, Faroe Islands, Germany, Ireland, Norway, United Kingdom, USA.
Report available as Doc. C.M. 1993/B:5.

36. Working Group on Fishing Technology and Fish Behaviour
(C.Res.1992/2:9)
Chairman: Mr B. van Marlen
Held in Gothenburg, Sweden, 19-20 April 1993.
Countries represented: Belgium, Canada, Denmark, Faroe Islands, Finland, France, Germany, Greece, Iceland, Ireland, Netherlands, Norway, Spain, Sweden, United Kingdom, USA.
Report available as Doc. C.M. 1993/B:2.

37. Working Group on Fisheries Acoustics Science and Technology
(C.Res.1992/2:10)
Chairman: Mr E.J. Simmonds
Held in Gothenburg, Sweden, 21-22 April 1993.
Countries represented: Belgium, Canada, Denmark, Faroe Islands, Finland, France, Germany, Greece, Iceland, Ireland, Netherlands, Norway, Spain, Sweden, United Kingdom, USA.
Report available as Doc. C.M. 1993/B:3.

Hydrography Committee

38. Working Group on Shelf Seas Oceanography
(C.Res.1992/2:37)
Chairman: Mr H. Dahlin
Held in Charleston, USA, 10-13 February 1993.
Countries represented: Canada, Finland, France, Germany, Ireland, Netherlands, Norway, Portugal, Spain, Sweden, USA.
Report available as Doc. C.M. 1993/C:3.

39. Working Group on Oceanic Hydrography
(C.Res.1992/2:34)
Chairman: Dr E. Buch
Held in Aberdeen, Scotland, 21-23 April 1993.
Countries represented: Canada, Denmark, Faroe Islands, Germany, Iceland, Netherlands, Norway, Sweden, United Kingdom, USA.
Report available as Doc. C.M. 1993/C:2.

40. Working Group on Marine Data Management
(C.Res.1992/2:35)
Chairman: Dr (Ms) L. Rickards
Held in Aberdeen, Scotland, 22-24 April 1993.
Countries represented: Canada, Denmark, Faroe Islands, Finland, Iceland, Ireland, Norway, Sweden, United Kingdom.
Report available as Doc. C.M. 1993/C:1.

41. Study Group on SKAGEX
(C.Res.1992/2:36)
Chairman: Dr B. Dybern
Held in Klaipeda, Lithuania, 29 June - 2 July 1993.
Countries represented: Denmark, Estonia, Germany, Lithuania, Norway, Poland, Russia, Sweden.
Report available as Doc. C.M. 1993/C:4.

Marine Environmental Quality Committee

42. Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea
(C.Res.1992/2:40)
Chairman: Dr L. Hernroth
Held in Gdynia, Poland, 16-19 March 1993.
Countries represented: Denmark, Finland, Germany, Latvia, Poland, Sweden.
Report available as Doc. C.M. 1993/E:4.

43. Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea
(C.Res.1992/2:39)
Chairman: Dr U. Harms
Held in Gdynia, Poland, 16-19 March 1993.
Countries represented: Denmark, Finland, Poland, Sweden.
Report available as Doc. C.M. 1993/E:3.

44. Steering Group for the Coordination of the Baseline Study of Contaminants in Baltic Sea Sediments
(C.Res.1992/2:41)
Chairman: Dr M. Perttilä
Held in Helsinki, Finland, 19-20 April 1993.
Countries represented: Denmark, Estonia, Finland, Germany, Lithuania, Sweden.
Report available as Doc. C.M. 1993/E:6.

45. Working Group on the Baltic Marine Environment
(C.Res.1992/2:42)
Chairman: Dr H.P. Hansen
Held in Helsinki, Finland, 21-23 April 1993.
Countries represented: Estonia, Finland, Germany, Sweden.
Report available as Doc. C.M. 1993/E:6.

46. Working Group on the Effects of Extraction of Marine Sediments on Fisheries
(C.Res.1992/2:43)
Chairman: Dr S.J. de Groot
Held in St Valery-sur-Somme, France 12-15 May 1993.
Countries represented: Belgium, Canada, France, Ireland, Netherlands, Sweden, United Kingdom, USA.
Report available as Doc. C.M. 1993/E:7.

47. ICES/HELCOM Workshop on Quality Assurance of Chemical Analytical Procedures for the Baltic Monitoring Programme
(C.Res.1992/3:4)
Chairmen: Dr U. Harms and Dr G. Topping
Held in Hamburg, 5-8 October 1993.
Countries represented: Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Netherlands, Poland, Russia, Sweden, United Kingdom.
Report to be presented to 1994 Statutory Meeting.

Mariculture Committee

48. Second Special Meeting on Ichthyophonus
(C.Res.1992/2:46)
Chairman: Dr A. McVicar
Held in Aberdeen, Scotland, 21-22 January 1993.
Countries represented: Canada, Denmark, Germany, Ireland, Netherlands, Norway, Sweden, United Kingdom, USA.
Report available as Doc. C.M. 1993/F:9.

49. Working Group on Pathology and Diseases of Marine Organisms
(C.Res.1992/2:47)
Chairman: Dr A. McVicar
Held in Copenhagen, 15-18 March 1993.
Countries represented: Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Ireland, Netherlands, Norway, Sweden, United Kingdom.
Report available as Doc. C.M. 1993/F:5.

50. Working Group on Introduction and Transfers of Marine Organisms
(C.Res.1992/2:44)
Chairman: Dr J.T. Carlton
Held in Aberdeen, Scotland, 26-28 April 1993.
Countries represented: Canada, France, Germany, Ireland, Norway, Sweden, United Kingdom, USA.
Report available as Doc. C.M. 1993/F:3.

51. Working Group on Genetics
(C.Res.1992/2:49)
Acting Chairman: Prof. W. Villwock
Held in Stockholm, Sweden, 8-11 June 1993.
Countries represented: Finland, Germany, Norway, Sweden, United Kingdom.
Report available as Doc. C.M. 1993/F:7.

52. Working Group on Mass Rearing of Juvenile Marine Fish
(C.Res.1992/2:48)
Chairman: Dr B. Howell
Held in Bergen, Norway, 24-26 June 1993.
Countries represented: Belgium, Canada, France, Germany, Iceland, Netherlands, Norway, Poland, Portugal, Spain, Sweden, United Kingdom.
Report available as Doc. C.M. 1993/F:8.

Demersal Fish Committee

53. Study Group on Beam Trawl Surveys
(C.Res.1992/2:16)
Chairman: Dr R. Millner
Held in Cuxhaven, Germany, 20-22 April 1993.
Countries represented: Belgium, Germany, Netherlands, United Kingdom.
Report available as Doc. C.M. 1993/G:5.

54. Study Group on Redfish Stocks
(C.Res.1992/2:15)
Chairman: Dr J. Magnusson
Held in Copenhagen, 12-14 May 1993.
Countries represented: Faroe Islands, Germany, Greenland, Iceland, Norway, Russia.
Report available as Doc. C.M. 1993/G:6.

55. Species Coordinators for the 1991 Stomach Sampling Project
(C.Res.1992/2:14)
Chairman: Dr J.R.G. Hislop
Held in IJmuiden, Netherlands, 2-7 September 1993.
Countries represented: Denmark, Germany, Netherlands, Norway, United Kingdom.
Report presented to 23 November - 2 December 1993 meeting of Multispecies Assessment Working Group.

Pelagic Fish Committee

56. Planning Group for Herring Surveys in the North Sea and Adjacent Areas
(C.Res.1992/2:17)
Chairman: Mr E.J. Simmonds
Held in Aberdeen, Scotland, 2-5 February 1993.
Countries represented: Denmark, Germany, Netherlands, Norway, United Kingdom.
Report available as Doc. C.M. 1993/H:3.

57. Mackerel/Horse Mackerel Egg Production Workshop
(C.Res.1992/2:18)
Chairman: Mr A. Eltink
Held in Aberdeen, Scotland, 8-12 March 1993.
Countries represented: Ireland, Netherlands, Portugal, Spain, United Kingdom.
Report available as Doc. C.M. 1993/H:4.

Baltic Fish Committee

58. Planning Group for Hydroacoustic Surveys in the Baltic
(C.Res.1992/2:19)
Chairman: Mr E. Götze
Held in Copenhagen, 19-20 April 1993.
Countries represented: Denmark, Germany, Latvia, Poland, Sweden, Russia.
Report available as Doc. C.M. 1993/J:5.

59. Study Group on the Evaluation of Baltic Fish Data
(C.Res.1992/2:21)
Chairman: Dr T. Raid
Held in Gdynia, Poland, 7-11 June 1993.
Countries represented: Denmark, Estonia, Latvia, Poland, Sweden.
Report available as Doc. C.M. 1993/J:5.

Shellfish Committee

60. Study Group on the Biology, Life History, and Assessment of *Majid* Crabs
(C.Res.1992/2:25)
Chairman: Mr D. Latrouite
Held in Jersey, Channel Islands, 19-21 May 1993.
Countries represented: Canada, France, Spain, Sweden, United Kingdom.
Report available as Doc. C.M. 1993/K:3.

61. Study Group on the Life History and Assessment of Cephalopods
(C.Res.1992/2:25)
Chairman: Dr U. Piatkowski
Held in Dublin, Ireland, 2-5 October 1993.
Report to be presented to 1994 Statutory Meeting.

62. Study Group on Life Histories and Assessment Methods of *Pandalus* Stocks in the North Atlantic
(C.Res.1992/2:24)
Chairman: Mr S. Munch-Petersen
Held in Reykjavik, Iceland, 6-11 September 1993.
Report available as Doc. C.M. 1993/K:7.

Biological Oceanography Committee

63. Study Group on GULF III Plankton Sampler Efficiency Calibrations
(C.Res.1992/2:54)
Chairman: Prof. D. Schnack
Held in Aberdeen, Scotland, 3 February 1993.
Countries represented: Denmark, Germany, Norway, United Kingdom.
Report available as Doc. C.M. 1993/L:8.

64. Study Group on the Dynamics of Algal Blooms
(C.Res.1992/2:52)
Chairman: Ms B. Reguera
Held in Charleston, USA, 8-11 February 1993.
Countries represented: Canada, Finland, France, Germany, Ireland, Netherlands, Norway, Portugal, Spain, Sweden, USA.
Report available as Doc. C.M. 1993/L:7.

65. Study Group on Zooplankton Production
(C.Res.1992/2:53)
Chairman: Mr H.-R. Skjoldal
Held in Las Palmas, Canary Islands, 8-11 March 1993.
Countries represented: Canada, Germany, Iceland, Norway, Spain, United Kingdom, USA.
Report available as Doc. C.M. 1993/L:11.

66. Benthos Ecology Working Group
(C.Res.1992/2:55)
Chairman: Dr P. Kingston
Held in Kiel, Germany, 3-8 May 1993.
Countries represented: Canada, Faroe Islands, Germany, Netherlands, Norway, Poland, Spain, Sweden, United Kingdom, USA.
Report available as Doc. C.M. 1993/L:3.

67. Study Group on Methods of Spatial and Temporal Integration
(C.Res.1992/2:51)
Chairman: Prof. E. Gurney
Held in Glasgow, Scotland, 14-18 June 1993.
Countries represented: Denmark, France, Germany, Norway, Poland, United Kingdom.
Report available as Doc. C.M. 1993/L:9.

68. Study Group on Seabird/Fish Interactions
(C.Res.1992/2:29)
Chairman: Prof. G.L. Hunt
Held in Copenhagen, 6-10 September 1993.
Countries represented: Canada, Denmark, Germany, Norway, United Kingdom, USA.
Report available as Doc. C.M. 1993/L:10.

Anadromous and Catadromous Fish Committee

69. Study Group on Stock Identification Protocols of Finfish and Shellfish Stocks
(C.Res.1992/2:27)
Chairman: Dr K. Friedland
Held in Copenhagen, 16-19 August 1993.
Countries represented: Canada, Finland, Sweden, United Kingdom, USA.
Report available as Doc. C.M. 1993/M:3.

Marine Mammals Committee

70. Workshop on the Distribution and Sources of Pathogens in Marine Mammals
(C.Res.1992/2:56)
Chairman: Dr J. Harwood
Held in Cambridge, England, 22-26 March 1993.
Countries represented: Canada, Denmark, Germany, Netherlands, Spain, Sweden, United Kingdom.
Report available as Doc. C.M. 1993/N:6.

71. Study Group on Seals and Small Cetaceans in European Seas
(C.Res.1992/2:32)
Chairman: Dr J. Harwood
Held in Cambridge, England, 29 March - 2 April 1993.
Countries represented: Denmark, France, Germany, Ireland, Netherlands, Norway, Spain, United Kingdom.
Report available as Doc. C.M. 1993/N:3.

INCOME AND EXPENDITURE ACCOUNTS FOR 1/11/1991 - 31/10/1992

INCOME

		DKK	DKK
1.	**National Contributions**		
	Belgium	464,800.00	
	Canada	697,200.00	
	Denmark	697,200.00	
	Finland	348,600.00	
	France	929,600.00	
	Germany	929,600.00	
	Iceland	464,800.00	
	Ireland	464,800.00	
	Netherlands	697,200.00	
	Norway	929,600.00	
	Poland	697,200.00	
	Portugal	464,800.00	
	Russia	929,600.00	
	Spain	697,085.00	
	Sweden	697,200.00	
	United Kingdom	929,600.00	
	USA	697,200.00	11,736,085.00
2.	**Interest**		
	General Funds	681,778.85	
	Capital Reserve Fund	107,243.62	
	Computer Loan	22,213.73	
	Computer Equipment Fund	35,189.24	
	- Bank Charges	2,188.13	
	Sub-total	**844,237.31**	
	Carried to Capital Reserve Fund	107,243.62	
	Carried to Computer Equipment Expenditure	22,213.73	
	Carried to Computer Equipment Fund	35,189.24	679,590.72
3.	**Publications**		
	Sale of Publications	266,669.85	
	An Annotated Bibliography on the Pinnipedia	7,016.49	
	Sub-total	**273,686.34**	
	Carried to Balance Sheet	7,016.49	266,669.85
4.	**Contribution from NEAFC**		487,500.00
5.	**Contribution from IBSFC**		179,000.00
6.	**Contribution from Oslo and Paris Commissions**		426,651.00
7.	**Contribution from Helsinki Commission**		98,539.91
8.	**Contribution from NASCO**		251,500.00
	To carry forward		14,125,536.48

			DKK	DKK
INCOME brought forward				14,125,536.48
9.	**Contribution from EC Commission**			1,253,148.00
10.	**Contribution from Faroe Islands and Greenland**			223,500.00
11.	**Transferred from Capital Reserve Fund**			35,000.00
12.	**Supplementary Budget**			464,786.00
13.	**Miscellaneous Income**			
	Royalties on "Study of the Sea"		487.53	
	ICES Ties		3,460.00	
	ICES T-shirts and Sweatshirts		14,896.00	
	ICES Keyfobs		630.00	
	ICES Mugs		4,331.81	
	Sub-total		**23,805.34**	
	Carried to Balance Sheet		23,317.81	487.53
	Contribution from AMOCO		31,870.55	
	- Honorarium Prof. Beverton	2,912.37		
	- Brochure DIS	18,849.50		
	- 90th Birthday Celebration	10,108.68	31,870.55	0.00
14.	**North Sea Task Force**			
	Balance as at 1 November 1991	115,172.71		
	Contribution 1992	383,400.00	498,572.71	
	- Travels	152,184.94		
	- Salary	171,112.38		
	- Various	8,550.40		
	- General Office Overheads	31,848.54	363,696.26	
	Sub-total		**134,876.45**	
	Carried to Balance Sheet		134,876.45	0.00
	NSTF General Fund as at 1/11/1991		78,602.75	
	- Data Handling		58,925.61	
	Sub-total		**19,677.14**	
	Carried to Professional Category Posts		19,677.14	0.00
	NSTF Benthos Contribution from Norway		74,885.00	
	- Used		63,978.21	
	Sub-total		**10,906.79**	
	Carried to Balance Sheet		10,906.79	0.00
15.	**NODC**			
	Contribution		152,742.38	
	- Salary		133,730.59	
	- Various		49,066.10	
	Sub-total		**- 30,054.31**	
	Carried to Balance Sheet		30,054.31	0.00
GRAND TOTAL				**16,102,458.01**

EXPENDITURE

			DKK	DKK
1.	**Incidentals for President and Chairmen**			55,800.00
2.	**Salaries**			
	(a) Professional Category Posts	5,537,667.05		
	- NSTF General Fund	19,677.14	5,517,989.91	
	(b) General Service Category Posts		5,505,124.11	
	(c) Provision for Increase in Salaries		42,538.00	
	(d) Periodic Assistance		316,821.42	
	(e) Personnel Services		731,886.45	
	Sub-total		**12,114,359.89**	
	- Staff Assessment		3,107,189.25	9,007,170.64
3.	**Office Expenses**			
	(a) Electricity and Heating		318,419.01	
	(b) Watchman		171,972.08	
	(c) Office Cleaning		447,781.10	
	(d) Stationery		386,085.65	
	(e) Postage, Telephone, etc.		611,097.57	
	(f) Office Equipment		58,154.59	
	(g) Insurance		53,995.36	
	(h) Office Maintenance		100,000.00	
	(i) Miscellaneous	69,647.29		
	T-shirts and Sweatshirts	26,962.50		
	Mugs	13,975.31		
	Sub-total	**110,585.10**		
	Carried to Balance sheet	40,937.81	69,647.29	
	(j) Library		9,633.94	
	Sub-total		**2,226,786.59**	
	- Overhead cost NSTF 1991		31,848.54	
	Sub-total		**2,194,938.05**	
	- Refundment of VAT		320,428.62	1,874,509.43
4.	**ADP Expenses**			
	(a) Running Costs (Computer and Word Processing)		986,143.10	
	(b) Replacement Items		103,989.05	
	(c) Instalment, Computer System Loan		500,000.00	
	New Computer Equipment	298,537.25		
	- Interest earned	22,213.73		
	Sub-total	**276,323.52**		
	Carried to Balance Sheet (Remainder Comp.Loan)	240,434.29	35,889.23	
	- Sale of Hard- and Software	15,523.00		
	- Payment for Data Handling	1,150.00	16,673.00	
	Sub-total		**1,609,348.38**	
	- Refundment of VAT		214,903.44	1,394,444.94
To carry forward				12,331,925.01

			DKK	DKK
EXPENDITURE brought forward				12,331,925.01
5.	**Expenses for C.M.1992, Rostock**			
(a)	General Expenses		110,612.36	
(b)	Travels		302,690.09	413,302.45
6.	**Travels, Meetings, etc.**			
(a)	Bureau		63,353.22	
(b)	President and General Secretary		111,923.26	
(c)	ACFM		789,503.40	
(d)	ACME		343,690.47	
(e)	Other Secretariat Travels and Meetings		120,270.06	
(f)	Symposia		37,443.53	
(g)	Programme Planning Group		56,691.01	
(h)	Intercalibration Exercises		55,600.00	1,578,474.95
7.	**Publications**			
(a)	ICES Marine Science Symposia		450,000.00	
(b)	ICES Annual Report		29,204.27	
(c)	ICES Cooperative Research Reports		125,000.00	
(d)	Oceanographic Data Lists		0.00	
(e)	ICES Fisheries Statistics		0.00	
(f)	Leaflets for Plankton and Diseases		27,187.70	
(g)	TIMES		30,000.00	
(h)	Newsletter		30,131.50	
(i)	Pinnipedia, Supplement 2	63,800.00		
	- Payment from UNEP	18,741.00		
	Sub-total	**45,059.00**		
	Carried to Balance Sheet	45,059.00	0.00	
(j)	Reprint Outlay 1991/1992	11,472.00		
	Received	11,347.00		
	Sub-total	**125.00**		
	Carried to Balance Sheet	125.00	0.00	691,523.47
8.	**Pensions**			
(a)	Voted Pensions		24,000.00	
(b)	ICES Pension Scheme		462,731.37	
(c)	Danish State Pension (ATP)	40,219.20		
	- Payment for negative VAT	4,755.00	35,464.20	522,195.57
Total				**15,537,421.45**
9.	**Excess of Income over Expenditure 1991/1992**			
	Photocopier		301,040.00	
	Computer Equipment		100,000.00	
	Carried to Capital Reserve Fund		163,996.56	565,036.56
GRAND TOTAL				**16,102,458.01**

BALANCE SHEET ON 31 OCTOBER 1992

LIABILITIES

	DKK	DKK
Capital Reserve Fund		
as of 1/11/1991	1,082,432.20	
Interest	107,243.62	
- Loss in Value of Bonds on 31/10/1992	1,604.35	
- Transferred to Budget 1991/1992	35,000.00	
Transferred from Accounts 1991/1992	163,996.56	1,317,068.03
Computer Equipment Fund		
as of 1/11/1991	425,443.09	
Interest	35,189.24	460,632.33
Pension Funds		
as of 1/11/1991	511,077.42	
Contributions 1991/1992	313,064.77	
Interest less Loss in Value of Bonds on 31/10/1992	58,623.82	
- Capital paid	474,911.18	407,854.83
UNIBANK Computer Loan		
as of 1/11/1991	1,425,000.00	
Instalment	500,000.00	
Interest paid	86,436.20	1,011,436.20
Contributions prepaid for 1992/1993		10,819,817.00
Danish State Pension (ATP)		5,313.60
Intercalibration Exercises		55,600.00
Hydrocarbon Measurement Exercises		20,566.97
Intercalibration Exercise on PCBs		45,000.00
North Sea Task Force		134,876.45
NSTF BENTHOS		10,906.79
Provision for Increase in Salaries		42,538.00
Interest 1992/1993		413,058.50
Funds		37,171.12
Publications		691,901.41
Creditors		345,327.10
Photocopier		301,040.00
Computer Equipment		100,000.00
TOTAL		**16,220,108.33**

ASSETS

	DKK	DKK
Cash in hand	88,756.00	
UNIBANK Check Account	53,172.48	
UNIBANK 842-44-15562	246,300.93	
UNIBANK Bonus Account	9,989,703.25	
Giro Account	1,570.59	
UNIBANK/Capital Reserve Fund	1,042,333.57	
UNIBANK/Computer Fund	460,632.33	11,882,469.15
UNIBANK/Pensions		7,155.83
Computer Equipment	1,425,000.00	
- Written off	413,563.80	1,011,436.20
Bonds		
Capital Reserve Fund:		
Market Value of 10% Kreditforening Danmark, alm. 43-2004 (nom. value DKK 111,800) on 31/10/1992, 99.05		110,737.90
Pension Funds		400,699.00
Prepaid Postage		10,900.00
Stock of:		
Ties	13,236.59	
- Sale	3,460.00	9,776.59
T-shirts and Sweatshirts Old Stock	4,790.34	
T-shirts and Sweatshirts New Stock	26,962.50	
- Sale	14,896.00	16,856.84
Keyfobs	9,967.85	
- Sale	630.00	9,337.85
Mugs	13,975.31	
- Sale	4,331.81	9,643.50
An Annotated Bibliography on the Pinnipedia	16,693.84	
An Annotated Bibliography on Seals, Sea Lions, and Walrus	45,059.00	
- Sale	7,016.49	54,736.35
Debtors		
Unpaid Contributions	1,801,067.41	
Publications	37,231.25	
Reprint Outlay	125.00	
Outlay C.M.1992	2,746.00	
NODC	30,054.31	
VAT Computer Equipment	13,975.00	1,885,198.97
VAT on Publication Expenses	93,826.27	
VAT on Sale of Publications	24,656.77	
Sub-total	**69,169.50**	
- VAT refunded	67,879.00	1,290.50
Suspense Account		
ACFM Meeting November 1992	299,462.65	
Travels	10,407.00	
Instalment Computer Loan	500,000.00	809,869.65
TOTAL		**16,220,108.33**

Emory D. Anderson
General Secretary

Karen Schrader
Administrative Secretary

The above Accounts and Balance Sheet have been audited. Rule 20(vii) of the Council's Rules of Procedure has been observed.

During the audit Rigsrevisionen observed that the pension scheme in ICES had been changed for some staff-members. The audit revealed some problems in respect of this new pension scheme.

On this background it was agreed with ICES that Rigsrevisionen on behalf of ICES should consult the Ministry of Taxation. The Ministry also identified some problems related to the new pension scheme.

ICES has informed Rigsrevisionen that the necessary changes to the pension scheme will be implemented in due time.

The audit also covered some other administrative matters which have all found a satisfactory solution.

For the Auditor General of Denmark

- 8 SEP. 1993

RIGSREVISIONEN
ST. KONGENSGADE 45-47
1264 KØBENHAVN K

I. L. BIGLER

HENRIK OTBO

We approve the foregoing Accounts and Balance Sheet.

BUDGET FOR FINANCIAL YEAR 1993/1994

INCOME

		Approved Budget 1992-1993	Approved Forecast Budget 1993-1994	Budget 1993-1994
		DKK	**DKK**	**DKK**
1.	**National Contributions**			
	Belgium	497,200	524,600	524,600
	Canada	745,800	786,900	786,900
	Denmark	745,800	786,900	786,900
	Finland	372,900	393,450	393,450
	France	994,400	1,049,200	1,049,200
	Germany	994,400	1,049,200	1,049,200
	Iceland	745,800	786,900	786,900
	Ireland	497,200	524,600	524,600
	Netherlands	745,800	786,900	786,900
	Norway	994,400	1,049,200	1,049,200
	Poland	745,800	786,900	786,900
	Portugal	497,200	524,600	524,600
	Russia	994,400	1,049,200	1,049,200
	Spain	745,800	786,900	786,900
	Sweden	745,800	786,900	786,900
	United Kingdom	994,400	1,049,200	1,049,200
	USA	745,800	786,900	786,900
	Total	**12,802,900**	**13,508,450**	**13,508,450**
2.	**Interest**	528,650	560,000	660,000
3.	**Sale of Publications**	122,000	150,000	150,000
4.	**Contribution from NEAFC**	532,000	561,300	561,300
5.	**Contribution from IBSFC**	195,000	205,700	205,700
6.	**Contribution from Oslo and Paris Commissions**	455,000	481,000	720,100
7.	**Contribution from Helsinki Commission**	220,000	232,100	232,100
8.	**Contribution from NASCO**	274,500	289,600	274,500
9.	**Contribution EC Commission**	1,333,900	1,460,400	1,375,700
10.	**Contributions Faroe Islands and Greenland**	244,000	257,300	257,300
11.	**Miscellaneous Income**	0	0	5,000
12.	**Transferred from Capital Reserve Fund**	75,000	75,000	75,000
13.	**Special Income from Latvia**	0	0	50,000
	GRAND TOTAL	**16,782,950**	**17,780,850**	**18,075,150**

EXPENDITURE

		Approved Budget 1992-1993	Approved Forecast Budget 1993-1994	Budget 1993-1994
		DKK	**DKK**	**DKK**
1.	**Incidentals for President and Chairmen**	**55,800**	**55,800**	**55,800**
2.	**Salaries**			
	a) Professional Category Posts	6,079,650	6,750,000	6,566,000
	b) General Service Category Posts	5,687,500	5,890,000	6,201,400
	c) Increase in Salaries	48,500	85,000	85,000
	d) Periodic Assistance	150,000	150,000	150,000
	e) Personnel Services	941,000	1,100,000	982,600
	Sub-Total	**12,906,650**	**13,975,000**	**13,985,000**
	- Staff Assessment	3,214,000	3,405,000	3,363,500
	Total	**9,692,650**	**10,570,000**	**10,621,500**
3.	**Office Expenses**			
	a) Electricity and Heating	336,000	370,000	250,000
	b) Watchman	175,000	184,000	180,000
	c) Office Cleaning	462,000	470,000	470,000
	d) Stationary	338,500	380,000	380,000
	e) Postage, Telephone, etc.	505,000	583,000	555,000
	f) Office Equipment	53,000	40,000	50,000
	g) Insurance	42,000	55,000	55,800
	h) Office Maintenance	180,000	180,000	180,000
	i) Miscellaneous	58,000	50,000	77,000
	j) Library	6,500	6,050	6,050
	Sub-total	**2,156,000**	**2,318,050**	**2,203,850**
	- Refundment of VAT	270,000	326,000	325,000
	Total	**1,886,000**	**1,992,050**	**1,878,850**
4.	**EDP Expenses**			
	a) Running Costs (Computer and Word Processing)	1,050,000	1,095,000	1,095,000
	b) Replacement Items	78,000	82,000	82,000
	c) Instalment, Computer System Loan	500,000	500,000	500,000
	Sub-total	**1,628,000**	**1,677,000**	**1,677,000**
	- Refundment of VAT	203,000	235,000	235,000
	Total	**1,425,000**	**1,442,000**	**1,442,000**

EXPENDITURE

		Approved Budget 1992-1993	Approved Forecast Budget 1993-1994	Budget 1993-1994
		DKK	DKK	DKK
5.	**Expenses for C.M.1994, St. John's**			
	a) General Expenses	115,000	330,000	125,000
	b) Travel	354,000	100,000	465,000
	Total	**469,000**	**430,000**	**590,000**
6.	**Travel, Meetings, etc.**			
	a) Bureau	86,000	76,000	76,000
	b) President and General Secretary	80,000	70,000	70,000
	c) ACFM	830,000	770,000	800,000
	d) ACME	386,000	350,000	465,000
	e) Other Secretariat Travel and Meetings	115,500	135,000	135,000
	f) Symposia	72,000	30,000	30,000
	g) Programme Planning Group	72,000	50,000	50,000
	h) Intercalibration Exercises	58,000	58,000	58,000
	Total	**1,699,500**	**1,539,000**	**1,684,000**
7.	**Publications**			
	a) ICES Marine Science Symposia	475,000	550,000	550,000
	b) ICES Annual Report	28,500	31,000	31,000
	c) ICES Cooperative Research Reports	218,000	218,000	218,000
	d) Oceanographic Data Lists	10,000	10,000	10,000
	e) ICES Fisheries Statistics	58,000	58,000	58,000
	f) Leaflets for Plankton and Diseases	40,000	41,500	41,500
	g) TIMES	50,000	52,000	52,000
	h) Newsletter	31,500	32,500	32,500
	Total	**911,000**	**993,000**	**993,000**
8.	**Pensions**			
	a) Voted Pensions	24,000	24,000	12,000
	b) ICES Pension Scheme	590,000	705,000	758,000
	c) Danish State Pension (ATP)	30,000	30,000	40,000
	Total	**644,000**	**759,000**	**810,000**
	GRAND TOTAL	**16,782,950**	**17,780,850**	**18,075,150**

INTERNATIONAL ORGANIZATIONS HAVING OBSERVER STATUS AND COOPERATIVE RELATIONS WITH ICES

1. Atlantic Salmon Trust Ltd.
2. Arctic Ocean Science Board
3. Baltic Marine Environment Protection Commission (HELCOM)
4. Comision Tecnica Mixta del Frente Maritimo
5. Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)
6. Commission of the European Communities
7. Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée (CIESM)
8. Commonwealth Scientific and Industrial Research Organization (CSIRO) (Australia)
9. Danish Institute for Fisheries Economics Research
10. European Association of Fisheries Economists
11. European Inland Fisheries Advisory Commission
12. European Aquaculture Society
13. European Association for Marine Science and Technology
14. Fisheries Society of the British Isles
15. Institute for Fisheries Research and Development (INIDEP) (Argentina)
16. International Association for Biological Oceanography (IABO)
17. International Atomic Energy Agency (IAEA)
18. International Baltic Sea Fishery Commission (IBSFC)
19. International Center for Living Aquatic Resource Management (ICLARM)
20. International Commission for the Conservation of Atlantic Tunas (ICCAT)
21. International Council of Scientific Unions (ICSU)
22. International Institute of Fisheries Economics & Trade (IIFET)
23. International Maritime Organization (IMO)
24. International Pacific Halibut Commission (IPHC)
25. International Union for the Conservation of Nature and Natural Resources (IUCN)
26. International Whaling Commission (IWC)
27. London Convention on Dumping
28. Ministry of Agriculture and Fisheries, Fisheries Marine Research (New Zealand)
29. Nordic Council of Ministers
30. North Atlantic Marine Mammal Commission (NAMMCO)
31. North Atlantic Salmon Conservation Organization (NASCO)
32. North-East Atlantic Fisheries Commission (NEAFC)
33. North Pacific Anadromous Fish Commission (NPAFC)
34. North Pacific Marine Science Organization (PICES)
35. Northwest Atlantic Fisheries Organization (NAFO)
36. Organization for Economic Cooperation and Development (OECD)

37. Oslo and Paris Commissions (OSPARCOM)

38. Scientific Committee on Oceanic Research (SCOR)

39. Sea Fisheries Research Institute (South Africa)

40. Statistical Office of the European Communities (EUROSTAT)

41. United Nations Educational, Scientific and Cultural Organization (UNESCO)
    Intergovernmental Oceanographic Commission (IOC)

42. United Nations Environment Programme (UNEP)

43. United Nations Food and Agriculture Organization (FAO)
    Department of Fisheries

44. World Wide Fund for Nature (WWF)

ACRONYMS APPEARING IN ICES ANNUAL REPORT 1993

ABC	Atmospheric Benthic Coupling
ACFM	Advisory Committee on Fishery Management
ACME	Advisory Committee on the Marine Environment
ACMP	Advisory Committee on Marine Pollution
ADCP	Acoustic Doppler Current Profiler
ADP	Automatic Data Processing
AMAP	Arctic Monitoring and Assessment Programme
ANACAT	Anadromous and Catadromous Fish Committee
ANCOVA	Analysis of Covariance
AVHRR	Advanced Very High Resolution Radiometer (NOAA/USA)
AZTI-SIO	Instituto de Investigacion y Technologia para la Oceanografia, Pesca y Alimentacion (Spain)
BC	British Columbia (Canada)
BE	Biological Effects
BIM	Bord Iascaigh Mhara (Sea Fisheries Board) (Ireland)
BMB	Baltic Marine Biologists
BMFD	British Marine Fishes Data Base
BMP	Baltic Monitoring Programme
CA	California (USA)
CAFSAC	Canadian Atlantic Fisheries Scientific Advisory Committee
CB	Chlorobiphenyl
CCC	Cod and Climate Change
CD-ROM	Compact Disc - Read-Only Memory
CEC	Commission of the European Communities
CIEM	Conseil International pour l'Exploration de la Mer
CIESM	Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée
CMP	Cooperative Monitoring Programme (ICES)
C/N	Carbon/Nitrogen
CNR/IRPEM	Consejo Nazionale deile Ricerche/Istituto di Ricerche sulla Pesca Marittima (Italy)
COADS	Comprehensive Ocean-Atmosphere Data Set
CPR	Continuous Plankton Recorder
CPUE	Catch Per Unit Effort
CSIRO	Commonwealth Scientific and Industrial Research Organization (Australia)
CTD	Conductivity Temperature Depth
CWP	Coordinating Working Party on Fishery Statistics
DC	District of Columbia (USA)
DDT	Dichloro-Diphenyl-Trichloro-ethane
DG	Directorate-General
DKK	Danish Kroner
DHA	Docosahexaënoic Acid
DNA	Deoxyribonucleic Acid
DSP	Diarrhetic Shellfish Poisoning
DTX-2	Dinophysistoxin-2
EAFE	European Association of Fisheries Economists
EC	European Community
ECMWF	European Centre for Medium Range Weather Forecasts
ECOPS	European Committee of Ocean and Polar Sciences
ECU	European Currency Unit
EDLR	Ecosystem Dynamics and Living Resources
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EIFAC	European Inland Fisheries Advisory Commission

EPA	Eicosapentaënoic Acid
EROD	Ethoxyresorufin-O-Deethylase
EUROSTAT	Statistical Office of the European Communities
F	Instantaneous fishing mortality coefficient
FAA	Fatty Amino Acid
FAO	Food and Agriculture Organization (UN)
FAST	Fisheries Acoustics Science and Technology (Working Group)
FISHBASE	Global biological data base on fish, crustaceans, and molluscs
FL	Florida (USA)
FTFB	Fishing Technology and Fish Behaviour (Working Group)
GA	Georgia (USA)
GEF	Global Environmental Facility
GESAMP	Group of Experts on the Scientific Aspects of Marine Pollution
GIS	Geographical Information System
GMO	Genetically Modified Organism
GODAR	Global Oceanographic Data Archaeology and Rescue (IOC)
GOOS	Global Ocean Observing System
GOV	Grande Ouverture Verticale
GSH-T	Glutathione-S-Transferase
GSI	Genetic Stock Identification
HABD	Harmful Algal Bloom Dynamics
HCB	Hexachlorobenzene
HCH	Hexachlorocyclohexane
HELCOM	Helsinki Commission (Baltic Marine Environment Protection Commission)
HP	Hewlett Packard
IABO	International Association for Biological Oceanography
IAEA	International Atomic Energy Agency
IBM	International Business Machines
IBSFC	International Baltic Sea Fishery Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICES	International Council for the Exploration of the Sea
ICES MSS	*ICES Marine Science Symposia*
ICLARM	International Center for Living Aquatic Resource Management
ICSU	International Council of Scientific Unions
IFREMER	Institut Français de Recherche pour l'Exploration de la Mer (France)
I-GLOBEC	International Global Ocean Ecosystem Dynamics Research
IIFET	International Institute of Fisheries Economists & Trade
IMO	International Maritime Organization
INIDEP	Instituto National de Investigacion y Desarollo Pesquero (Argentina)
IOC	Intergovernmental Oceanographic Commission
IODE	International Oceanographic Data and Information Exchange (IOC)
IPHC	International Pacific Halibut Commission
IPIMAR	Instituto Português de Investigação Marítima (Portugal)
IPN	Infectious Pancreatic Necrosis
IPNV	Infectious Pancreatic Necrosis Virus
IREP	International Recruitment Project
IRG	Inter-Committee Recruitment Group
ISBN	International Standard Book Number
ISSN	International Standard Serial Number
ISVPA	Instantaneous Separable Virtual Population Analysis
IUCN	International Union for the Conservation of Nature and Natural Resources
IWC	International Whaling Commission
IYGPT	International Young Gadoid Pelagic Trawl

JMP	Joint Monitoring Programme (OSPARCOM)
JMAP	Joint Monitoring and Assessment Programme
JNCC	Joint Nature Conservation Committee
LME	Large Marine Ecosystem
LOIS	Land-Ocean Interaction Study
LPUE	Landings Per Unit Effort (life histories and ass. methods of Nephrops)
LTMM	Long-Term Management Measures (Working Group)
M	Instantaneous natural mortality coefficient
MAFF	Ministry of Agriculture, Fisheries, and Food (UK)
MA	Massachusetts (USA)
MANCOVA	Multivariate Analysis of Covariance
MAST	Marine Science and Technology (CEC)
MBAL	Minimum Biologically Acceptable Level
MCWG	Marine Chemistry Working Group
MD	Maryland (USA)
MEQC	Marine Environmental Quality Committee
METEOSAT	European Space Agency's Satellite
MIK	Mid-water Isaac's Kidd Trawl
MORENA	Multidisciplinary Oceanographic Research in the Eastern Boundary of the North Atlantic
MRDB	Marine Resource Data Base
MSVPA	Multispecies Virtual Population Analysis
MSW	Multi-Sea-Winter
NAFO	Northwest Atlantic Fisheries Organization
NAMMCO	North Atlantic Marine Mammal Commission
NASCO	North Atlantic Salmon Conservation Organization
NB	New Brunswick (Canada)
NGO	Non-Governmental Organization
NJ	New Jersey (USA)
NOAA	National Oceanic and Atmospheric Administration (USA)
NPAFC	North Pacific Anadromous Fish Commission
NS	Nova Scotia (Canada)
NSTF	North Sea Task Force
NW	Northwest
OECD	Organization for Economic Cooperation and Development
OIE	Office International des Epizooties
OMEX	Ocean Margin Exchange
OR	Oregon (USA)
ORSTOM	Office de la Recherche Scientifique et Technique Outre-Mer (France)
OSLR	Ocean Science in Relation to Living Resources
OSPARCOM	Oslo and Paris Commissions
PARCOM	Paris Commission
PC	Personal Computer
PCB	Polychlorinated Biphenyl
PDV	Phocid Distemper Virus
PICES	North Pacific Marine Science Organization
PINRO	Polar Research Institute of Marine Fisheries and Oceanography (Russia)
PMEQC	PICES Marine Environmental Quality Committee
PUFA	Polyunsaturated Fatty Acid
QA	Quality Assurance
QUASIMEME	Quality Assurance of Measurements in the Marine Environment (CEC)
QSR	Quality Status Report

RI	Rhode Island (USA)
RNA	Ribonucleic Acid
SARP	Sardine Anchovy Recruitment Project
SC	South Carolina (USA)
SCOR	Scientific Committee on Oceanic Research
SEFOS	Shelf Edge Fisheries Oceanography Studies
SFG	Scope-For-Growth
SGDAB	Study Group on the Dynamics of Algal Blooms
SKAGEX	Skagerrak Experiment (1990)
SMHI	Swedish Meterological and Hydrological Institute
SOAFD	Scottish Office Agriculture and Fisheries Department
SSB	Spawning Stock Biomass
SST	Sea Surface Temperature
STATLANT	Statistical Programme for Atlantic Fisheries
STCF	Scientific and Technical Committee for Fisheries (CEC)
STSD	Standardized Temperature Salinity Depth
TAC	Total Allowable Catch
TNPC	Traitement Numérique de Pièces Calcifiées
TS	Target Strength
TV	Television
TX	Texas (USA)
UK	United Kingdom
UKDMAP	United Kingdom Digital Marine Atlas
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
USSR	Union of Soviet Socialist Republics
UTV	Underwater Television
VA	Virginia (USA)
VPA	Virtual Population Analysis
WA	Washington (USA)
WGBEC	Working Group on Biological Effects of Contaminants
WGEAMS	Working Group on Environmental Assessment and Monitoring Strategies
WGEIM	Working Group on the Environmental Interactions of Mariculture
WGITMO	Working Group on Introductions and Transfers of Marine Organisms
WGMDM	Working Group on Marine Data Management
WGMRJMF	Working Group on Mass Rearing of Juvenile Marine Fish
WGMS	Working Group on Marine Sediments in Relation to Pollution
WGOH	Working Group on Oceanic Hydrography
WGPDMO	Working Group on Pathology and Diseases of Marine Organisms
WGSAEM	Working Group on Statistical Aspects of Environmental Monitoring
WGSSO	Working Group on Shelf Seas Oceanography
WMO	World Meteorological Organization
WOCE	World Ocean Circulation Experiment
WV	West Virginia (USA)
WWF	World Wide Fund for Nature
1SW	One-Sea-Winter
2SW	Two-Sea-Winter

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[1] Until 3 January 1994
[2] As of 3 January 1994
[3] Until 28 February 1994
[4] As of 21 February 1994

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