



010

REPORT OF THE  
**ICES/GLOBEC NORTH ATLANTIC REGIONAL  
COORDINATION GROUP**

Baltimore, USA  
26 September 1997 and 29 September 1997

**This report is not to be quoted without prior consultation with the General Secretary.** The document is a report of an expert group under the auspices of the International Council for the Exploration of the Sea and does not necessarily represent the views of the Council.

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

## TABLE OF CONTENTS

Section	Page
1 INTRODUCTION .....	1
1.1 Terms of reference .....	1
1.2 Opening and Adoption of Agenda and Timetable.....	1
1.3 Issues to be covered during the meeting .....	1
2 REPORT ON PROGRESS WITH THE PROGRAMME AND PLANS FOR FUTURE WORK .....	2
2.1 Cod and Climate Change .....	2
2.1.1 Workshop on Predicting Decadal Scale Ocean Climate Fluctuations of the North Atlantic (WKPDOC) .....	2
2.1.2 Workshop on Application of Environmental Data to Fisheries Assessments (WKEDSA).....	2
2.1.3 Backward Facing 3.....	2
2.1.4 1997 Annual Science Conference.....	3
2.2 1998 Annual Science Conference.....	3
3 ORGANISATIONAL AND FINANCIAL DEVELOPMENTS.....	3
3.1 Relations with new Science Committees.....	3
3.2 Future Financial and Institutional Support .....	3
4 RELATIONS WITH OTHER PROGRAMMES .....	3
APPENDIX 1 LIST OF PARTICIPANTS.....	4
APPENDIX 2 LIST OF ACRONYMS .....	4
APPENDIX 3 .....	5
APPENDIX 4 REPORT ON THE ICES/GLOBEC OPEN MEETING. ....	7

## **1 INTRODUCTION**

As specified by Council Resolution 1996/2:12 the fourth meeting of this group took place on 26 September (0830 - 1130) in Baltimore during the 1997 Annual Science Conference under the chairmanship of Dr M. Reeve, with Mr H. Loeng as Vice-Chairman. Participants at the meeting are given in Appendix 1. Acronyms used in the report are given in Appendix 2. An Open Discussion Session on the ICES/GLOBEC programme also took place during the ASC, on 29 September (0830 - 1030) and a report of this session is included here (Appendix 4).

Terms of reference for the Group are set out in C.Res. 1995/2:8, of which the relevant parts are:

### **1.1 Terms of reference**

Council Resolution 1995/2:8

- a) provide oversight and direction for the North Atlantic Regional Office of GLOBEC, including primary ICES advice regarding selection of the Office Co-ordinator;
- b) integrate country activities into a co-ordinated GLOBEC implementation plan and continuing oversight of the implementation phase;
- c) provide scientific direction for liaison with other regional bodies (e.g., PICES) and global organisations (IOC, SCOR, IGBP) and nominate representatives to those bodies as appropriate;
- d) develop plans for the design and implementation of an integrated data management system for the North Atlantic;
- e) recommend the establishment of subsidiary groups to provide expert advice if and where necessary, but always first seeking to enlist the help of existing ICES committees and Working/Study Groups by providing them with specific terms of reference as appropriate;
- f) identify and direct the North Atlantic Regional Office of GLOBEC in order to implement appropriate ways to engage the widest possible involvement in scientific development and communication through workshops, the ICES annual meeting and special sessions at other scientific meetings;
- g) organise the peer review of the reports of the Cod and Climate Change related Study/Working Groups and Workshops;
- h) report to the Consultative Committee at ICES Annual Science Conferences.

### **1.2 Opening and Adoption of Agenda and Timetable**

Apologies for absence were received from Dr Alheit, who had asked Dr Rumohr to report briefly on progress with the Backward Facing Workshop on the North Sea, planned for 1999.

### **1.3 Issues to be covered during the meeting**

Participants were invited to put forward any issues which they wished the meeting to address, in order that these could be accommodated within the agenda. Dr Roger Harris asked for information on the new committee structures in ICES and about the future direction of the Cod and Climate Change programme. Dr Elizabeth Gross suggested that care was needed to avoid confusion over what was and was not included as part of the ICES/GLOBEC programme. Prof. John Shepherd mentioned the Living Marine Resources (LMR) component of GOOS and said that the relationship between this and GLOBEC was very close. The LMR report for GOOS will be published shortly and it should be used in planning the GLOBEC programme and presenting it to potential funders. Dr Mike Reeve asked how ICES was linking with GOOS and mentioned a report to appear shortly, which considers the monitoring legacy of US GLOBEC. Dr Stig Carlberg described some of the connections which are being developed with GOOS. Mr Harald Loeng spoke about the Science Plan which the Oceanography Committee will prepare and the place for ICES/GLOBEC within it. Dr Maurice Heral mentioned the French GLOBEC programme. He said that it was not very clear how the GLOBEC programme as a whole was structured and to find out who was working on what. A list would be useful. Dr Harris responded to this on behalf of the International GLOBEC programme. He described the plans for the Open Science meeting due to take place in Paris in March 1998, which will include presentations from national and regional GLOBEC programmes in order to provide information on the current status.

In view of the diversity of existing programmes which have a varying degree of connection to GLOBEC, Prof Shepherd suggested that a straightforward acknowledgement of this diversity would be useful and that it would be sensible to classify them as (i) formally connected to GLOBEC (ii) informally connected (iii) relevant. Dr Keith Brander said this was a task for the international programme, which has the authority to accredit programmes.

Dr Luis Valdes said that more effort was needed to explain the programme to the wider community and suggested that a collection of papers in the ICES Journal might be one way of achieving this. Dr Reeve offered to prepare a paper describing the relationships between various components of GLOBEC and with other international programmes in order to address some of the questions posed by Drs Heral and Valdes. Dr Roger Bailey spoke as the "sole representative of a large constituency of scientists who require advice on environmental effects." Very strong efforts are being made to forge better links between science and advice and there is also a need to communicate effectively with end-users. He was not sure that advisory scientists know what to make of GLOBEC and mentioned several instances where environmental data are already being used in management advice. Dr John Steele suggested that it was often helpful to make clear what was to be left out when defining a programme, as well as what was included. In contrast to other major global change programmes, such as JGOFS, GLOBEC will not leave out impacts i.e., the consequences for fisheries and marine environmental management are included. This should be made clear in the Implementation Plan.

Dr Gross noted that consideration of impacts was an aspect which IGBP regarded as important in order to make the programme relevant to the interest of many potential participating countries. Dr Svein Sundby asked how the programme could be related to the interest of the different DG's within the European Commission and whether DG XIV should be made more aware of its aims. Dr Olafur Astthorson expressed interest in Icelandic participation, and he will take part in the development of the EU Science Planning meeting for GLOBEC, which will take place shortly.

Dr Reeve pointed out that ICES has been more or less irrelevant to recent major international programmes in marine science. The GLOBEC programme is closely aligned to ICES interests and the ICES/GLOBEC programme is a recognised regional component. ICES should foster this involvement, but there is a crisis over how to support basic science in ICES and over whether it will be viewed in future as part of the "core activity" of ICES.

Prof Shepherd suggested that we should not be constrained by organisational problems, but should set out what we believe needs to be done from a scientific point of view and then consider the organisational means of implementing these plans. We need to develop a constructive dialogue with other international programmes. For example it would be valuable to invite participation in the Workshop on the Application of Environmental Data in Fisheries Assessments by a representative of EuroGOOS.

## **2 REPORT ON PROGRESS WITH THE PROGRAMME AND PLANS FOR FUTURE WORK**

### **2.1 Cod and Climate Change**

The Working Group did not meet during the past year, but a short report (CM 1997/A:9) was produced. Dr Ken Drinkwater has agreed to take over as chairman of the group, which will meet in Woods Hole on 7-8 May 1998, immediately after the third Backward Facing workshop. The principal objective for the group will be to review and evaluate work carried out to date on Cod and Climate Change and to plan a work programme for the next three years. The terms of reference are given in Appendix 3.

#### **2.1.1 Workshop on Predicting Decadal Scale Ocean Climate Fluctuations of the North Atlantic (WKPDOG)**

Dr Sundby presented a brief report on the workshop, which was held in Copenhagen on 8-10 September. There were 17 participants from 9 ICES countries. Two meteorologists specialising in atmospheric climatology participated, in addition to fisheries oceanographers, physical oceanographers and planktologists. A preliminary report has been produced (CM 1997/A:13) and a fuller report is being prepared. The outcome of the workshop will be followed up in the Oceanic Hydrography Working Group.

Dr Sundby will make a presentation about the workshop at Theme Session T and in the Open GLOBEC discussion session.

#### **2.1.2 Workshop on Application of Environmental Data to Fisheries Assessments (WKEDSA)**

The Workshop will take place in Bergen on 23-25 March, convened by Mr Odd Nakken.

#### **2.1.3 Backward Facing 3**

The Workshop will take place in Woods Hole on 4-6 May, convened by Dr F. Werner (Dr S. Murawski has since also kindly offered to co-convene). Detailed Terms of Reference and Justification have been prepared (see Appendix 3). A planning meeting for this workshop will be held during the Annual Science Conference (took place on 26 September).

#### **2.1.4 1997 Annual Science Conference**

The ICES/GLOBEC Theme Session (Results from Interdisciplinary Programs in the North Atlantic) has attracted a large number of participants and over fifty papers and posters. In addition about twelve relevant posters have been transferred from the Recruitment Symposium to the poster room at the ASC, to give them a wider audience. Posters about TASC, International GLOBEC and US GLOBEC are also on display in order to show some of the linkages between the various components of GLOBEC.

The proposed Open Discussion Session on ICES/GLOBEC will take place on 29 September (a full report is given in Appendix 4 below).

#### **2.2 1998 Annual Science Conference**

The idea for a GLOBEC theme session during the 1998 ASC in Lisbon has been followed through and a proposal entitled "Mesoscale Physical Phenomena and Biological Production: Implications for GLOBEC" has been put forward by Dr Valdes, with himself, Dr Antonio J da Silva and Dr Ken Tenore as co-convenors. (The proposal was subsequently accepted by the Consultative Committee as Theme Session R in Lisbon).

### **3 ORGANISATIONAL AND FINANCIAL DEVELOPMENTS**

#### **3.1 Relations with new Science Committees**

Mr Loeng (chairman of the new Oceanography Committee) put the case for bringing the ICES/GLOBEC programme, including the Cod and Climate Change Working Group, under the remit of the new Oceanography Committee. The committee will include work on physical oceanography, plankton and recruitment processes. All of these groups will be asked to provide an input to the preparation of the ICES Science Plan and this should bring out the areas of cooperation between the groups. For example the Oceanic Hydrography Working Group will take over and develop the outcome of the Cod and Climate Change Workshop on Predicting Decadal Scale Ocean Climate Variability.

#### **3.2 Future Financial and Institutional Support**

Delegates will be discussing future support for the ICES/GLOBEC programme during the ASC

### **4 RELATIONS WITH OTHER PROGRAMMES**

One of the problems in trying to coordinate pan-Atlantic research programmes is the difficulty of keeping the funding time scales in step, so that the scientists in different countries are able to work effectively together. With a programme such as TASC, the European component has been held in step by the substantial proportion of funding which comes from the EU. Dr Barthel indicated that closer cooperation between the EU and North American funding agencies should be possible in future. (Research cooperation agreements now exist with the US and Canada, as well as Norway, Iceland and other countries). Dr Barthel also mentioned that "outside" experts were increasingly called on for evaluation of research and that several North American participants were invited to the forthcoming workshop to develop an EU GLOBEC Science Plan.

## APPENDIX 1

### LIST OF PARTICIPANTS

Dr Olafur Astthorsson  
Dr Roger Bailey  
Dr Klaus-Günther Barthel  
Dr Keith Brander  
Dr Stig Carlberg  
Dr George Grice  
Dr Roger Harris  
Dr Maurice Heral  
Mr Harald Loeng  
Dr Mike Reeve  
Dr Heye Rumohr  
Prof. John Shepherd  
Prof. John Steele  
Dr Svein Sundby  
Dr Luis Valdes

## APPENDIX 2

### List of acronyms

ASC	Annual Science Conference
CCCWG	Cod and Climate Change Working Group
CLIVAR	Climate Variability and Predictability Programme
ELOISE	European Land Ocean Interaction Study
EU	European Union
GLOBEC	Global Ocean Ecosystem Dynamics Programme
GOOS	Global Ocean Observing System
IGBP	International Geosphere-Biosphere Programme
IOC	Intergovernmental Oceanographic Commission
JGOFS	Joint Global Ocean Flux Study
LME	Large Marine Ecosystem
LOICZ	Land Ocean Interaction in the Coastal Zone
PICES	North Pacific Marine Science Organisation
RCG	ICES/GLOBEC North Atlantic Regional Coordinating Group
SCOR	Scientific Committee on Ocean Research
SPACC	Small Pelagic Fishes and Climate Change Program
TASC	Trans-Atlantic Study of Calanus
VEINS	Variable Exchange In Nordic Seas
WKEDSA	Workshop on the Application of Environmental Data to Fisheries Assessments
WKPDOC	Workshop on Predicting Decadal Scale Ocean Climate Fluctuations of the North Atlantic
WGZE	Working Group on Zooplankton Ecology

## APPENDIX 3

2:6 A Third ICES/GLOBEC Backward-Facing Workshop [WKBFAC] under the chairmanship of Dr F. Werner (USA) and Dr S. Murawski (USA) will be held in Woods Hole, MA, USA from 4-6 May 1998 to:

- a) analyse the 1960s and the 1970s ocean climate in the Georges Bank and Scotian Shelf regions;
- b) determine the conditions that may have contributed to the formation of outstanding gadoid year-classes in these areas during the 1960s and 1970s (e.g 1966, 1971 and 1975 for cod; 1963, 1975 and 1978 for haddock on Georges Bank) including:
  - i. differences in 3-D circulation fields of "cold" and "warm" years,
  - ii. effect of temperature differences on the distribution of predators,
  - iii. effect of temperature on larval growth rates,
  - iv. temporal and spatial distribution and abundance of eggs, larvae, juveniles and spawners;
- c) compare the processes which appear to govern interannual variability in gadoid recruitment on Georges Bank and in other areas of the North Atlantic.

WKBFAC will report to the Oceanography Committee at the 1998 Annual Science Conference.

### Justification:

The Backward Facing I (BF-I) workshop (on the 1880's tilefish kill in the US Middle Atlantic Bight) held in Dartmouth, Canada, and BF-II held in Bergen, Norway (on the cold periods earlier this century and their effect on the Arcto-Norwegian cod stock) have provided us with new insight into the influence of past climate events on production and mortality in fish stocks. The Backward Facing III Workshop will focus on years of high gadoid recruitment on the NW Atlantic shelf (the regions of the Scotian Shelf, Gulf of Maine and Georges Bank). For example the '63 year class of haddock is one of the strongest of this century on Georges Bank and the '75 year class stands out by its success despite the presence of a low spawning stock biomass. The fisheries and oceanographic expertise and knowledge base developed in the NW Atlantic (through research programs like FEP, OPEN, GLOBEC, COP, MARMAP and others) make these natural targets of the BF-III workshop. Available data sets, models and level of understanding of key processes should allow the development of more quantitative relationships between environment and recruitment than has been possible from previous workshops.

2:7 The ICES/GLOBEC Working Group on Cod and Climate Change [WGCCC] (Chairman: Dr K. Drinkwater, Canada) will meet in Woods Hole, MA, USA from 7-8 May 1998 to:

- a) review and evaluate work carried out to date on Cod and Climate Change and to produce a detailed implementation plan for 1998/99, and an outline for the following three years, including:
  - i. methods for applying environmental data in stock assessments using specific examples where possible and developing a dialogue with WGCOMP, WGZE, and WGSSO on the kind of data required,
  - ii. methods for longer term stock predictions, which make use of results from the 1997 ICES/GLOBEC WKPDO, C,
  - iii. new results on biological processes and coupled physical/biological models from the 1997 ICES 'Recruitment' Symposium, the 1997 ICES/GLOBEC Theme Session on the Trans Atlantic Study of Calanus and regional and national GLOBEC programmes;
- b) develop plans for a fourth ICES/GLOBEC Backward-Facing Workshop in 1999;
- c) consider the future work programme in relation to the remit of the Oceanography Committee and the ICES Five-Year Plan, including cooperation with other Working Groups.

WGCCC will report to the Oceanography Committee at the 1998 Annual Science Conference.

### Justification:

a (i) and a (ii) Knowledge gained during recent years on the influence of environmental effects on recruitment, growth and distribution of cod, particularly the effects of variable transport, temperature and zooplankton abundance, is not utilised in stock assessment. This is because the tools for applying additional explanatory variables in stock assessments have yet to be developed. The CCC Workshop on Application of Environmental Data in Stock Assessment, the Fisheries Oceanography Committee of DFO, Canada and the Workshop on Changing Oceans and Changing Fisheries (NOAA, USA) have addressed these issues and it is timely to consider their conclusions along with the considerable body of related research within the GLOBEC programme in order to plan future work of the Cod and Climate Change programme, with the emphasis on developing short and long term applications. Since programme evaluation, synthesis and planning is also part of the remit of the Regional Coordinating Group it is proposed that the groups should meet consecutively at the same place.

a(iii): Present trophodynamic models have the capability of handling more details of environmental data and models. Such a development will give more realistic estimates of growth and mortality of larval and juvenile fish, and consequently contribute to increase the understanding of formation of year-class strength.

b) It is proposed that the third Backward Facing Workshop, to be held in April 1998, will concentrate mainly on the NW Atlantic. This will allow more time to prepare for a workshop in 1999 on the 1960s and 1970s anomalies in the NE Atlantic (including the "gadoid outburst"). Preparations for such a workshop have already begun and the CCC WG should review the plans and draft appropriate terms of reference.

c) This TOR has been provided by the Oceanography Committee to all the Working Groups of the Oceanography Committee.

2:8 The **ICES/GLOBEC North Atlantic Regional Coordination Group [GLOBEC]** (Chairman Dr M. Reeve, USA) will meet in Woods Hole, MA, USA on 9 May 1998 to:

- a) provide oversight and direction for the ICES/GLOBEC Office, including primary ICES advice regarding selection of the planning officer;
- b) integrate country activities into a co-ordinated GLOBEC implementation plan and continuing oversight of the implementation phase;
- c) provide scientific direction for liaison with other regional bodies (e.g., PICES) and global organisations (IOC, SCOR, IGBP) and nominate representatives to those bodies as appropriate;
- d) recommend the establishment of subsidiary groups to provide expert advice as necessary, but always first seeking to enlist the help of existing ICES Committees and Study/Working Groups by providing them with specific Terms of Reference as appropriate;
- e) identify and direct the ICES/GLOBEC Office to implement appropriate ways to engage the widest possible involvement in scientific development and communication through Workshops, the ICES Annual Science Conference and special sessions at other scientific meetings. GLOBEC will report to the Oceanography Committee at the 1998 Annual Science Conference.

2:10 The **ICES/GLOBEC Workshop on Applications of Environmental Data in Stock Assessment [WKEDSA]** will be held under the chairmanship of Mr O. Nakken (Norway) in Bergen, Norway from 23-25 March 1998 with the Terms of Reference as set out in C.Res.1996/2:11.

WKEDSA will report to the Oceanography Committee at the 1998 Annual Science Conference.

**Justification:**

The problems with holding this workshop in November 1997, as proposed in C.Res.1996/2:11, were discussed during the June 1997 meeting of the Regional Coordinating Group (CM 1997/A:8, para 2.1.2) and a date in March 1998 was put forward, with the same Terms of Reference.



## APPENDIX 4

### 1 REPORT ON THE ICES/GLOBEC OPEN MEETING (MONDAY 29 SEPTEMBER, 0830-1030).

Convener: Keith Brander; Rapporteur: Peter H. Wiebe

#### 1.1 Introduction

The session began with opening remarks by Keith Brander, including discussion of a proposed agenda. The first ICES/GLOBEC Newsletter, was provided as a background document for this meeting. It contains information about the history of the ICES/GLOBEC programme, a bibliography of reports, papers and symposia to date and a timetable of planned activities. His comments also concerned the role of the ICES/GLOBEC Office and of the Coordinator relative to the new ICES Science Committees. The linkage is primarily to the Oceanography Committee, but close cooperation with other committees was anticipated as well.

#### 1.2 International GLOBEC

Roger Harris then presented an overview of the status and activities of the International GLOBEC Program and Office. He reported that there was considerable enthusiasm for GLOBEC activities, but emphasized that the International Program is still in the initial stages of developing an Implementation Plan. There is a 1997 Science Plan and the Implementation Plan is to be completed by the end of 1997 and presented at the March 1998 Open Science meeting to take place in Paris. (IOC Headquarters, 17-20 March 1998; further information available from the GLOBEC International web site: <http://www1.npm.ac.uk/globec/index.htm>)

The focus of the Science Plan has four parts: retrospective analyses, process studies, modeling and predictive capabilities, and cooperative work with other global climate change programs. The major components of International GLOBEC are:

- GLOBEC core program
- GLOBEC Southern Ocean Program
- Small Pelagic Fishes and Climate Change (SPACC)
- ICES-GLOBEC Cod and Climate Change Program
- Pices-GLOBEC Climate Change and Carrying Capacity.

There is considerable research being done by National GLOBEC Programs or about to be started. Those countries which are now conducting research include Canada, China, France, Germany, Japan, United Kingdom, and the United States. GLOBEC related programs are being conducted in Norway (Mare Cognitum), the European Union (TASC), and South Africa (Benguela). Anticipated newcomers are Spain, Chile, New Zealand, Australia and South Africa.

The objective of the Open Science meeting in Paris next spring is to present research results from work ongoing in the respective programs. The intent is to have a combination of science talks on specific scientific issue and to have general overview talks. The talks will be assembled into a volume of papers which will be published.

The International Program Office is having funding difficulties and does not yet have an official existence. There is an initiative in progress to establish the office with funding in the UK, but an earlier attempt failed in part because the UK does not yet have a funded GLOBEC program and support for the International Office has been tied to this. There is however an office in Plymouth, a Web Site and a newsletter is being produced. More importantly, there is a plan of action once the IPO gets established. This plan includes re-building communication links globally, working with regional organizations, expanding GLOBEC research activities in the southern hemisphere, developing linkages with other programs (such as JGOFS, LOICZ, PAGES), capacity building and training in less developed countries, and data management.

Roger ended his briefing with the following conclusions:

- There is considerable enthusiasm and support for GLOBEC in the research community.
- Current programs are underway and productive.
- Communication between the various programs is being improved.
- Involvement in GLOBEC planning is being broadened.
- There is a large potential for significant advances over the next five years.

In response to Rogers comments, Keith Brander emphasised the need for good communication between the ICES GLOBEC office and the International Programs Office and this is already taking place.

### 1.3 GLOBEC within ICES

Keith Brander then gave a presentation about the status of the ICES/GLOBEC North Atlantic Program noting first that GLOBEC is part of the IGBP and that ICES is involved in both science and its application to management advice. One purpose of having GLOBEC within ICES is to improve the advice given by ICES on the management of marine resources. A number of components fall within or relate to the ICES/GLOBEC programme to a greater or lesser extent, including the ICES/GLOBEC office, the Cod and Climate Change programme, national programs, TASC, ICES symposia, workshops, and publications, and links to International GLOBEC. The aims of ICES/GLOBEC are to:

- Relate ecosystem research to the concerns of fisheries and environmental management
- Study the effect of climate on fisheries
- Draw a wider community of scientists into the activities of ICES
- Add value to national research through cooperation.

The time scales over which new scientific understanding may be applied may range from decades for strategic changes in fisheries to years for major changes in catch levels to inter-annual effects for improving catch forecasts for TACs. GLOBEC research is intended, among other things, to provide the basis for better forecasts at all of these scales.

The Cod and Climate Change Program is focusing effort on the best studied of marine fish species. While the dynamics of cod throughout its life history and the interactions are so complex that complete understanding will not be possible, there are grounds for optimism that some predictions will be possible, by applying the knowledge gained. For example it has been known since the 1930's that the distribution and abundance of cod at Greenland is affected by prevailing temperature.

The Cod and Climate Change Program is run by a parent Working Group, which has met every second year to evaluate and plan a series of one-off workshops on specific topics, such as intermediate scale physical processes; data and information issues; retrospective analysis and predicting decadal climate change in the North Atlantic. Two workshops are planned for the coming year on application of environmental data to fish assessment and retrospective analyses of the 1960's and 70's changes in the NW Atlantic.

The purposes of the ICES/GLOBEC Office is the coordination of national and regional programs, facilitation of database and information exchange, linkage of science and advisory work, coordination activities within ICES, and fostering links to International GLOBEC.

TASC (the Trans Atlantic Study of Calanus) is linked to the ICES/GLOBEC programme in a loose way. This program, which has EU-MAST, Canadian, and U.S. participants has its own newsletter (collated, printed and distributed by the ICES/GLOBEC office) and website. An ICES sponsored symposium will be the focus of TASC activities in 1999.

The European GLOBEC is just getting off the ground. It is a subset of the International Program and while its science plan is aimed at the European Science community it will draw on a wider range of international expertise and research. Discussion followed Keith's presentation with a question raised by Walter Nellen about the possibility of expanding the work on cod and haddock to include Norwegian herring. Keith pointed out that there were advantages in concentrating efforts on a limited range of issues and that the Norwegian Mare Cognitum program is focused on this herring stock. Svein Sundby added to this by saying that Mare Cognitum was started in 1993 with main program objective to study the Norwegian herring stock. This three year program has been renewed for an additional three years and will end in 1999. He also pointed out that some of the research in TASC is on herring.

Another question was raised by Mike Sinclair about the direct effects of temperature on the distribution of cod which he understood is not now in the Cod and Climate purview. He said there was considerable debate now in the North West Atlantic about the effects of temperature in causing distributional shifts in the Canadian cod stocks. Keith responded by putting up an overhead of the terms of reference for the Cod and Climate Backward Facing Workshop, which includes long-term temperature fields in relation to fish distributions.

Peter Wiebe asked about UK funding of the International Office. He voiced concern about the current situation because, in his view, there was a great need for that office to exist and to support collaborative efforts between researchers of the various GLOBEC programs. He asked if there was anything that could be done to assist in helping the decision be a positive one. Keith Brander said that there was nothing that could be done at this stage. Roger Harris voiced the same opinion and stated that considerable international pressure had been brought to bear on this issue. He said that he was optimistic that the decision would be favorable this time around, but if it wasn't there would be a need to look for another country to sponsor the International GLOBEC Program Office.

#### **1.4 The U.S. GLOBEC Program**

Keith Brander asked Peter Wiebe to provide a brief overview of the GLOBEC program activities in the U.S. Wiebe reviewed the conceptual framework and goals of the program. The U.S. program is centered on understanding how climate change or climate variability may impact marine animal populations and marine living resources. The research is founded on the belief that climate change will be manifested in fundamental changes in the physical structure and atmospheric forcing of the oceans and in turn, these changes would have significant effects on the population dynamics of the animal populations. The research is focused on the plankton and in particular the planktonic larval stages of important "target" species. The research is multi-disciplinary involving both physicist and biologists and it is multi-dimensional requiring field work (mapping of distribution and abundance and of the physical fields, and process oriented experimental work), retrospective analyses of existing data sets, and modeling. The program has also fostered the development of new technology to enhance the sampling and experimental capabilities of the researchers. Research was first started in the U.S. on Georges Bank in 1994 and will continue through 1999. Pilot field studies at two sites in the North Pacific (one off the Oregon/Washington coast and the other along the southern coast of Alaska) are set to begin shortly. This work will also be directed towards retrospective analyses and modeling. There is an additional effort now being developed for work in the Antarctic.

#### **1.5 Mare Cognitum and related program in the Norwegian Sea**

Hein Rune Skjoldal gave a brief description of the Mare Cognitum and related programs. He said that about \$3.5 million/year was going into this program and that there was strong cooperation between investigators in TASC and Mare Cognitum. He also mentioned the program VEINS, which is studying variability of flow into and out of the Norwegian Sea, and the program known as EPOS II, the European Polar Ocean Study, which is using tracers to study the vertical and horizontal flows in the northerly reaches of the Norwegian Sea. He emphasized that there is a floating borderline between research cruises dedicated to more basic research and cruises for stock assessment. In his view, both are now playing a role in developing the kind of data sets required to understand the dynamics of the animals populations and their relationship to the environment, and that work on these cruises may overlap. He also called attention to the fact that a recent special issue of *Sarsia* is a collection of papers stemming from the Mare Cognitum Program.

#### **1.6 European GLOBEC**

Klaus-Guenther Barthel was asked to comment on the development of the European GLOBEC initiative. He called attention to the programs in existence or just finishing that were funded by the European Union, namely ICOS (started in 1994) and TASC (started in 1996) which are both 3-year programs. The attempt at this stage is to develop a GLOBEC initiative with European focus which will serve as a basis for European activities. A European Science Plan for GLOBEC will be prepared shortly, since the Fifth Framework Program will start in 1998 and will go for 4.5 years (to 2002). While there is a strong tendency to keep the European collaborations in-house, he emphasized that pan Atlantic collaboration is essential for a programme like GLOBEC. Whether or not Framework 5 has a GLOBEC component remains to be determined, but Klaus-Guenther was optimistic that it would. He pointed out that EU project funding is usually for a 3-year period and requires an equal share-cost basis on the part of the recipient nations and that this often was in the form of ship time support, infra-structure support, and other kinds of support.

#### **1.7 Future Plans within ICES**

Keith Brander gave a brief overview of future plans within ICES. The Cod and Climate Change Working Group will meet in Woods Hole on the 7th and 8th of May 1998 under the new chairman, Dr Ken Drinwater (Canada) to review and evaluate the work carried out to date and to plan the further development of the programme. The third Backward Facing workshop will meet in Woods Hole on the three preceding days (4-6 May), convened by Dr Francisco Werner. The next meeting of the Regional Coordinating Group for the ICES/GLOBEC programme will take place on 9 May in Woods Hole. The workshop on Application of Environmental Data to Stock Assessment will take place in Bergen, convened by Mr Odd Nakken (Norway) on 23-25 March 1998. A Theme Session is being proposed (and subsequently confirmed) for the 1998 ICES Annual Science Conference in Spain entitled " Meso-scale physical phenomena and biological production: Implications for GLOBEC". There will be a special ICES sponsored TASC symposium on the Population dynamics of *Calanus* in the North Atlantic in Tromsø, Norway in August 1999.

The new Oceanography Committee will be the parent committee for the Cod and Climate Change programme in future and Harald Loeng, the chairman, commented that he intended to include GLOBEC in the forthcoming preparation of a five year Science Plan for ICES.

Mike Sinclair turned the discussion back to the topic he had raised earlier about bottom temperature effects on fish distributions on continental shelves by saying that juveniles should be included in Cod and Climate Change studies and

that bottom temperature rather than surface temperature was a critical element. Peter Wiebe pointed out that the US GLOBEC observation and modelling looked at water column temperature throughout the depth range of the animals of interest, so bottom temperature was being included. Steve Murawski pointed out that there were twelve cod stocks in the North Atlantic and asked how one links up the physical changes to impact on the stocks, especially if the vertical distribution is not well known? He also raised the issue of reconstructing bottom temperatures.

Hein Rune Skjoldal called attention to an ACME report on Operational Oceanography and noted that there was a call to process, assemble, and use environmental data in stock assessment activities, that some countries were doing this, but there is a need for ICES to be doing it, and that there is a need for coordination between GOOS and GLOBEC because GLOBEC gets at the mechanisms and GOOS provides broad-scale environmental monitoring. Keith Brander said that the degree to which ICES is directly involved in science and setting science directions is under continuing discussion. This led into the issue of the ICES/GLOBEC Office and its continued existence. He said that his tenure as ICES/GLOBEC Coordinator finishes in June 1998. The possibility of continuing with the Office is being explored. The programme has to demonstrate its relevance and applicability to ICES goals because of the critical issue of resource allocation with ICES.

Mike Reeve said that he and Harold Loeng were responsible for the creation of the ICES/GLOBEC Coordinator position and that it was funded in part by the U.S., Norway, U.K and E.U. He said that it was not clear that funding will be forthcoming to continue the position and in fact that ICES was facing a deficit before the current term ends. Mike emphasized that he thought that the Coordinator position was very important and that he hoped Keith Brander would continue in it.

Jake Rice followed by saying he was struck by the need to acknowledge that ICES had two identities, a science identity and an advisory identity. The advice side of the house was becoming revenue generating and was nearly self sufficient, while the science side was not a revenue builder. He said that the science role of GLOBEC in the short, medium, and long term was well defined, but there was a need to pay more attention to providing advice or getting into the advice giving arena. There were some areas that he thought could be developed to demonstrate the feasibility and value of applying GLOBEC science in relation to advice and he used the phrase "precautionary approach" to characterize this. Keith Brander strongly supported this point of view and said it would be the main line of activity over the coming year. Mike Sinclair said that within the context of this discussion he thought it important to re-define the Cod and Climate Change initiative in ICES. This is the task of the Cod and Climate Change Working Group in 1998.

Peter Wiebe made the comment that in his view, the future of research in GLOBEC will move from regional scale work to the global scale, involving all of the North Atlantic under the wing of ICES. To do this will require much more collaboration between researchers from both sides of the North Atlantic and this in turn will require more, not less, effort by the ICES/GLOBEC Coordinator if it is to be done successfully. Walter Nellen took the opposing view saying that he thought Jake Rice's comments were important concerning the role that ICES has played in stimulating GLOBEC, but that it might not be needed beyond this point. Steve Murawski sided with those thinking that there was still a real need to have a special office. In a final comment, Keith Brander asked the attendees to make their views known about this issue to the delegates to ICES.

Keith Brander thanked the attendees for participating in the meeting and then closed the session a little after 1030.