

Fishing Technology Committee (B)

Chair: Stephen J. Walsh (Canada)

Rapporteur: Norman Graham (Norway)

Opening

The Committee met on 21 September from 09:00 to 13:00 and 24 September from 16:00 to 18:00. The agenda was adopted without modifications. There were 25 participants from 15 member countries. The meeting was dedicated to the memory of Erik Stenersen (Norway), who passed away suddenly 3 weeks ago and who had been a long serving participant at the WGFAST meetings.

Reports of Expert Groups

Working Group on Fishing Technology and Fish Behaviour (WGFTFB)

The ICES-FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB) met in Gdynia, Poland, 20–23 April 2004 (Doc. B:05). The group considered four specific topics (ToRs) with a fifth considered during the joint session with WGFAST on 22 April. Topic Groups worked by correspondence to produce a series of review documents, outlining the state of the art, summarising the key issues, and providing recommendations for future actions. These working document reports formed the core of the 2004 WGFTFB meeting. The Theme Group on Colour and Contrast in Netting Materials and Twines, and its relationship with fish behaviour, reviewed nearly 50 years of research, covering a wide range of gears, locations, species, and behavioural reactions. To obtain information on whether fishing gear manufacturers considered netting colour important, the group also conducted extensive commercial interviews. It was concluded that in fishing conditions where visual stimuli are important, i.e. shallow waters, manipulation of netting colours might provide a simple mechanism to improve selectivity. It is recommended that in order to define fisheries where visual stimuli may be important, light measurement methodology should be standardised. The Theme Group on Technological Increase in Commercial Fishing Operations concluded that technological creep is traditionally viewed from either a biological or economic perspective and that such advances can have positive, negative, or neutral effects depending on that perspective. Biologically, increases in efficiency pertaining to increased CPUE can be of concern to managers, particularly where effort limitation schemes are used. From an economic viewpoint, efficiency increases may affect CPUE, but they can also result in a reduction in operating cost for a given unit of catch. The significance of this is that it is acknowledged that economic forces are amongst the most important drivers of change in the catching sector. The Theme Group on Benthic Impact and Mitigation Measures found that the effects of towed gears varied considerably between fisheries, that the determination of these effects was problematic, and that experimental protocols and interpretation of the results needed to be carefully considered. The group identified a number of useful modifications such as drop-out panels and semi-pelagic gear, and several novel projects that had focussed on more benign methods of stimulating fish reactions to aid fish capture. The group needs to obtain WGFTFB to seek advice from other WGs such as WGEKO to define quantifiable impact indicators. The Theme Group on Baltic Cod Selectivity collated all available selectivity data on T90 codends and conducted an alternative analysis, which identified the principal components affecting selectivity. However, this could not be directly compared to the Bacoma data due to the differences in methodological approach. It was agreed that a further analysis using the guidelines laid down in the ICES Selectivity Manual for Towed Gears be conducted together with all available Bacoma data. This initiative coincides with an official request from the

International Baltic Sea Fishery Commission (IBSFC) received a week prior to the WGFTFB meeting.

Working Group on Fisheries Acoustics, Science and Technology (WGFAST)

WGFAST convened 20–23 April 2004 in Gdynia, Poland (Doc. B:06) at the Sea Fisheries Institute and thanked their gracious host. The Working Group continued to address a variety of advanced technologies for ecosystem-based assessments, with particular attention to continued improvements in acoustical survey methods. Work was organized into four topic sessions and progress was facilitated by reviews of each topic, presentations on recent research, expert-led discussions, and the distillation of advances and outstanding issues. Especially in the context of ecosystem-based assessments, absolute abundance estimates should be pursued via error analyses. Such analyses have revealed that the principal challenges when using acoustics to evaluate ecosystem structure are: 1) species identification; 2) target strength estimation; and 3) fish detection bias due to avoidance reaction to survey vessels or residence in boundary areas such as near the sea surface, near-bottom, or near-shore. To further address these issues, it is necessary to improve the validation methods, account for the stochastic and non-stationary nature of sound scatter from marine organisms, and to characterize vessel noise and corresponding fish reactions. In the last decade, many multi-frequency techniques have been developed to improve species identification, at least for simple systems with a few dominant species having aggregations that are unmixed and dispersed. Empirical observations and model simulations of sound scatter from fish have progressively elucidated the variability of target strength due to the stochastic nature of sound scatter and the many non-stationary abiotic and biotic factors. Recently, many new empirical and physics-based models of target strength have been developed to account for this variability and thus characterize the probability density functions of target strength. Account of these target strength distributions in acoustical biomass estimations should ultimately reduce their systematic and random error. Related to fish avoidance reactions to survey vessels, multiple research efforts are underway. These and additional studies are needed to: 1) improve measurements of radiated vessel noise fields; 2) characterize the effectiveness of noise-quieted vessels; 3) identify the root causes of fish avoidance reactions; and 4) improve our understanding of how fish detect and respond to sound. WGFAST will next meet at FAO in Rome, Italy, on 19, 20, and 22 April 2005 to examine works in the following research areas: 1) measuring underwater acoustic energy and its effects on fish; 2) technologies for remote species identification (low-frequency, Doppler, multi-frequency, broadband, data integration, optical sensors); 3) alternative technologies (small-craft, buoys, ROV, AUV, gliders, fishing vessels, multi-beam sonar, acoustic cameras), with special attention to shallow water and near-boundary assessments (coastal, riverine, demersal and epipelagic species, and bottom typing); and 4) target strength (modelling and measurements).

Study Group on Collection of Acoustic Data from Commercial Vessels (SGAFV)

The Study Group on Collection of Acoustic Data from Commercial Vessels (SGAFV) held its first meeting at the Sea Fisheries Institute (SFI), Gdynia, Poland, prior to the 2004 meetings of WGFAST and WGFTFB (Doc. B:02). The meeting was chaired by W. Karp (USA), with Alex De Robertis (USA) acting as Rapporteur. Twenty-five scientists from six ICES member countries and three observer countries attended the meeting. Major agenda items and meeting goals included: review Terms of Reference (ToRs), review developments in the field, develop outline for final report, assign initial authorship responsibilities, reach agreement on work to be completed before the next meeting of the Study Group, recommend changes in the ToRs if appropriate, and identify major agenda items for 2005 meeting of SGAFV. All of these tasks were accomplished during the meeting. In addition to developing an outline for the final report

and identifying participating authors, lead authors for each chapter were identified. Each of the lead authors is now working with their group of writers to prepare draft text in advance of next year's meeting.

Study Group on Unaccounted Fishing Mortality (SGUFM)

SGUFM presented a report of their activities in 2003/2004 at the WGFTFB meeting in Gdynia (Doc. B:09). During this period, the Study Group has been collating data from a variety of sources, this will continue through 2004 and 2005. SGUFM are seeking contributions from scientists for data gathering, workshop participation, information on discard mortality and illegal and misreported landings, and to inform the Group of relevant data in the grey literature, of ongoing projects, and of anecdotal evidence. The potential of utilising discard data was well demonstrated for two fisheries in the North Sea, clearly identifying these as having high or acute discard problems. Such information could be used to specifically target gear technology research priorities.

Study Group on Acoustic Seabed Classification (SGASC)

The second meeting of the ICES Study Group on Acoustic Seabed Classification (SGASC) was held at the Sea Fisheries Institute (MIR), Gdynia, Poland 18–19 April 2004 (Doc. B:03). A total of twenty-nine delegates and observers participated in the two-day meeting, representing eleven countries and five industry groups. The meeting was chaired by John Anderson (Canada). Since the inaugural meeting in 2003, members of the Study Group have been working by correspondence to develop a detailed outline for an ICES Cooperative Research Report (CRR) on acoustic seabed classification. Lead authors were identified to develop the report chapters adopted last year and to recruit further experts as required in order to meet the Terms of Reference originally identified for the Study Group. The Study Group reviewed presentations by lead authors and developed timelines over the next year for the writing and editing of the *ICES Cooperative Research Report* on Acoustic Seabed Classification. The Study Group will meet next year, 2005, in association with the Working Group on Fisheries Acoustics and Science Technology (WGFAST) to review and finalize the CRR. The Study Group now has a direct contact with the Working Group on Marine Habitat Mapping (WGMHM) through R. Coggan (United Kingdom).

Ecosystem-based management of marine resources will require that natural regions be identified and mapped over a range of hierarchically nested scales. Acoustics is regarded as the remote sensing tool that will provide the basis for classifying and mapping ocean resources. Existing acoustic systems can measure seabed sediment properties and bedform morphology from scales of boulders ($< 1 \text{ m}^2$) to the scale of shelves ($> 100\,000 \text{ m}^2$). Acoustic metrics relating to seabed habitats can be regarded as proxy measures, or surrogates, of seabed habitats that can be collected in a cost-effective manner continuously across broad scales. Acoustic systems considered by the Study Group include vertical incidence single beam echosounders (SBES), oblique incident sidescan sonar systems (SSS) and multibeam echosounder systems (MBES).

The aim of the *ICES CRR* is to review the state-of-the-art in acoustic seabed classification (ASC). The report will provide an overview of the major issues and applications in this field and a comprehensive review of the technologies and techniques used to investigate these. Acoustic technology and classification science is rapidly evolving to meet the needs of nations to manage and conserve coastal resources. As such, the *ICES CRR* must be seen as representing a snap-shot of the discipline at this point in time. While we anticipate that new developments will occur regularly and that this subject must be revisited in the future, we hope that the *ICES CRR* will form a basis of our current understanding and will provide guidelines for the coordination of scientific developments in this field.

Report on the Workshop on Survey Design and Data Analysis (WKSAD)

The Workshop on Survey Design and Analysis [WKSAD] met in Aberdeen, Scotland, UK, from 21–25 June 2004. The report is available as ICES CM 2004/B:07. A review of methods of designing and analysing fish surveys was given, with the essential statistical elements to survey planning being described and an analytical framework for survey analysis proposed. Some surveys perform rather well and stock assessments may be improved using alternative models which use survey data more explicitly. This was followed by a summary of current methods describing survey practise in most of the ICES member states. Survey designs, estimation of abundance and variance, and use in assessments were covered for trawl, acoustic, and other (ichthyoplankton, visual, drag or dredge) surveys. A number of issues were raised where some uncertainty still remained, such as tow duration in trawl surveys, visual surveys, adaptive sampling and biological sampling methods in acoustic surveys.

There was general agreement on the choice of survey design. In the presence of positive local autocorrelation (common in most fish surveys), a more precise estimate of the population mean will usually be obtained by systematic sampling or stratified random sampling rather than by simple random sampling. The optimal sampling design depends on the population and the relative importance of getting the most precise estimate of the population mean, and also to getting a good estimate of that precision. Fixed survey designs are practical in areas with significant un-trawlable seabed, but cannot provide unbiased estimates of the variance. Information additional to that of fish density should be collected on surveys, particularly when that information is related (covariate) and can be collected more extensively. Information from the commercial fishing industry should also be considered, where appropriate, to provide guidance on survey design. A range of other options were considered and guidelines for the conduct of cooperative research surveys were given. A number of intercalibration studies of trawl surveys and acoustic surveys were presented. If calibration factors are estimated with poor precision (as is often the case), then applying them may result in estimates whose mean-square-errors are greater than the unadjusted estimates. Suggestions and advice for intercalibration exercises were given.

The Terms of Reference for the next meeting are: a) Evaluate analyses of estimates of the abundance, associated variance, and density maps, from surveys of a simulated fish population whose abundance is known; b) Evaluate alternative analyses of seven survey datasets; c) Review the state of knowledge regarding the effect of trawl duration on fish catch rate with a view to considering a reduction in sample trawl duration; d) Evaluate analyses of covariate data which could provide improved precision of abundance estimates; e) Review methods for combining surveys of the same resource using different methods; f) Evaluate the sensitivity of methods to estimate biological parameters in terms of analytical assumptions and measurement error.

The FTC Chair noted that some of the results on vessel intercalibration from this report will be used during the intercalibration experiments in 2005 with the English GOV surveys.

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

SGTSEB has met three times and the last meeting was held in Bergen, Norway in June 2003 (Doc. B:08). At the 2003 meeting it was decided to work on establishing a TS-relation based on relatively few terms, expressing the influence of fish length, pressure (depth), and frequency. Influences from tilt distribution, fish condition, and geographic area would be contained in the constant term until further knowledge has been obtained. The basis would be available data from surveys in the area. In 2004 the Study Group worked by correspondence. Members from Stockholm University, Sweden sent a letter asking for available acoustic data combined with fisheries data to scientists at the various institutions around the Baltic and has received some datasets from Lithuania, Latvia, Germany, and Sweden. A Danish dataset is

available, but has only been partly extracted because the SG Chair had an increased workload with cruises in 2004. The Study Group has also begun work on a set of X-ray images of herring and sprat (to obtain swimbladder shapes) delivered by Sweden from two locations, and this work will continue in 2005. Work on converting the datasets to the same format for analyses follows the method as published in the *ICES Journal of Marine Science* in 2004. There are some difficulties since various datasets are recorded with different software, but the SG believes that they can overcome some of the problems. Informal meetings with some of the group members were done during the WGFAST meeting in Gdynia and the literature list was updated.

For 2005, the Study Group will continue working by correspondence focusing on completing analyses of the Danish dataset, completing the set of X-ray photos, updating the literature search, and finalizing the *ICES CRR* report.

Study Group on Survey Trawl Gear for the IBTS Western and Southern Areas (SGSTG)

SGSTG met in Santander, Spain, 11–13 February 2004 to carry out their Terms of Reference (Doc. B:01). The report was reviewed by WGIBTS in April who suggested that the work of the Study Group had been successful, but that completion of their future ToRs would be delayed by current unfinished national and EU projects and the activities of other related ICES expert groups. Upon request of the Chair of SGSTG, the FTC Chair proposed the dissolution of this SG at the ConC mid-term meeting in June 2004, which was agreed upon. The Chair of SGSTG was thanked by the Committee for his work.

Fisheries Technology Committee, ACE, ACFM, and Consultative Committee business

ACFM Issues

1. **Discussion Group on the Incorporation of WGFTFB Information into Fisheries Based Advice.** The Chair of the ACFM was invited to the WGFTFB meeting and gave a presentation on the type of inputs required for fishery-based advice that could be provided by the WGFTFB. The Chair of the ACFM and the *ad hoc* discussion group met for one day to discuss the details of such advice and possible mechanisms through which it could be provided. The group identified areas where the WGFTFB could play an important role, such as the provision of: selectivity data by métier, definition of fleets, monitoring changes in technology and its application, capacity definitions, assessment of discards and bycatch in relation to the ecosystem approach, quantification of benthic impact, and the development of survey technology. The group concluded that the WGFTFB should be pro-active in encouraging dialogue between disciplines and needed to be able to respond at short notice to specific requests whilst continuing to encourage longer-term, systematic research. The group considered that the formation of an ICES multi-expert group workshop would be advantageous in order to facilitate open discussion regarding, *inter alia* methodologies, data collection, and standardising the means of incorporating WGFTFB information into ACFM's fisheries and ecosystem-based advice.
2. **WGFTFB response to the IBSFC** – Requests for advice on three specific gear topics were received by ICES from the IBSFC in April 2004. The timing of it was late for work to be started at the WGFTFB meeting the same month. However, an *ad hoc* group consisting of the Chair of WGFTFB and other members from the Baltic countries was set up, working throughout the summer to carry out the review of requests and report directly to ACFM. These reviews relate to (i) the suitability of mesh size for the pelagic trawl fishery for Baltic herring, (ii) which mesh size for 90° turned codends compares to the selectivity of a BACOMA

window of 110 mm for cod, and (iii) which hook size/shape was appropriate for the MLS of Baltic cod. The following is a synopsis of the scientific information provided by WGFTFB.

Request 1 – Herring selectivity

Due to the high escapee mortality rates observed, it is unlikely that controlling the length of first capture by mesh selection will provide any benefit to the stock and is likely to contribute considerably to unaccounted mortality. There are a number of technical modifications that may be used to reduce the quantity of meshed fish (stickers) associated with pelagic trawls, such as a reduction on mesh size or the use of netting that is turned by 90°.

Request 2 – Cod selectivity

A meta-analysis of selectivity estimates obtained from 299 hauls made during 14 cruises was conducted. This resulted in estimates for 19 gear types, comprising both T90 and BACOMA configurations. From this analysis, a model was derived that predicts for both L50 and SR: a 110-mm codend constructed from T90 mesh gives the same selectivity as a 110-mm BACOMA window fitted in a 105-mm codend. However, there are a number of caveats that must be considered. The individual cruises were not specifically designed or structured to answer the particular question posed. This presents a number of limitations for the statistical analysis:

- i) The analysis may underestimate the random variation due to over-representation of some cruises.
- ii) Due to the confounding effects of factors such as twine thickness, the number of meshes in circumference, and the vessel type, it has not been possible to determine the effect of these on selectivity. It is known from controlled experiments with conventional diamond mesh codends that these parameters have a significant effect on selectivity. In order to ascertain such effects, further research specifically aimed at quantifying such effects is needed before any advice on these parameters can be given. The group was informed that the IBSFC had approved the use of codends constructed from 110-mm T90 mesh in the Baltic cod fishery.

Request 3 – Hook selectivity

It is not possible for the WGFTFB to recommend a specific hook size and shape that corresponds to the minimum landing size of 38 cm for Baltic cod as there is no selectivity data currently available that can be used to determine the appropriate hook parameters. A controlled experiment where a range on different hook sizes and shapes are tested simultaneously is required.

A representative in attendance at the FTC meeting informed the Committee that during the 30th Session of the International Baltic Sea Fishery Commission (IBSFC), held in Gdańsk/Gdynia, 6–10 September 2004, its Standing Committee on Regulatory Measures decided to recommend to the Plenary the adoption of the **Resolution No. XXXI on the introduction of trawls using 90° turned diamond meshes**:

“Taking note of ICES advice on the selective properties of trawls using 90° turned diamond meshes, the Contracting Parties agree to allow for this type of gear when fishing for cod.

The Contracting Parties recognised that before this type of trawl can be introduced into the IBSFC Fishery Rules a detailed specification of the trawl is needed. The Contracting Parties therefore agreed to develop a technical specification and to revert to this matter when such a specification has been developed”.

The Fishing Technology Committee was very pleased with the amount of analyses carried out by the *ad hoc* WGFTFB group and praised the group on the extent of its full report delivered to ICES regarding this sensitive issue.

ACE issues

The Chair updated his activities in ACE and tabled a specific request from ACE looking for information about sonar effects on fish. Upon request of the Chair of ACE, the FTC Chair and Chair of WGFAST met with Mark Tasker from ACE to discuss the availability of information for ACE's response to DG Environment's request for advice on the effects of sonar on whales and fish for later this year. The FTC Committee noted that further work will be done on this topic in WGFAST in 2005.

Consultative Committee issues

The Chair summarized the highlights of the mid-term meeting of ConC and the meeting held on 19 September. Noteworthy was that there will be a resolution to the Delegates concerning relaxing the rules of who could attend meetings of those Expert Groups that do not report directly to an advisory committee. This is modelled on the operations of FTC. The Chair updated his role in the ICES Recognition Program which was embraced by the Delegates and was starting at this ASC meeting. Items directly related to the 2004 ASC were mentioned: 1) inform Theme Session Chairs to have their reports (electronic version) finished and passed in to ICES Secretariat by Saturday at the latest; 2) resolutions, deadline Saturday (24 September), need justifications, especially theme sessions and symposia; and 3) request for a Committee member to sit on the ASC Award Selection Committee. For the timing of 2005 ASC ConC noted that the Science Committees will now meet after the opening ceremonies instead of before as was the custom in the past. It implies an extra day of the ASC, i.e. 5 days.

The Chair noted that FTC has been asked by the Diadromous Committee to send a representative to the Study Group on the Bycatch of Salmon in Pelagic Trawl Fisheries (Marianne Holm, Norway), and this has been acted on.

Discuss the Letter to Expert Groups of Science and Advisory Committees – The Chair presented the letter sent to all expert group Chairs regarding the changes within the ICES operating procedures to come into line with the ecosystem approach to the marine environment. There was general agreement within the Committee that this was a positive move. It was noted that WGFTFB has already begun the move on this initiative at its annual meeting in Gdynia in April of this year. Working with the Chair of ACFM, the WGFTFB is proposing a dialogue workshop for early 2005 with five other working/study groups under either the Resource Management Committee, ACE, or ACFM. It was proposed that the Chair of NSCFP be invited to participate. WGFAST will be considering their role in providing a broadbase perspective on developing ecosystem-based technologies.

ICES Action Plan Audit – The Chair presented the new format for the ICES audit system. There were a number of discussions on how the Excel spreadsheet could be improved as its current form caused some confusion for some expert group Chairs due to repetition. It was agreed that the concept was good as it allowed the potential ability to cross-reference between committees and expert groups. Some Chairs were reminded to complete their audits before the 24 September meeting.

New Committee business

Forthcoming Theme Session topics, Workshops, and Symposia

- a) A second Joint FTC-LRC Workshop on Survey Design and Data Analysis [WKSAD] (Co-Chairs: P. G. Fernandes, UK, and M. Pennington, Norway) will be held in Sete,

France, from 9 to 13 May 2005. The first successful workshop held in June in 2005 was attended by 24 people from UK, Norway, USA, Canada, France, Ireland, Portugal, Denmark, Germany, Iceland, and Belgium. This highly successful workshop identified that there was insufficient time to meet all obligations because this is the first collective look at this topic since the early 1980s. It was proposed that a second workshop be planned.

- b) A Joint WGFTFB, SGFI, WGEKO, and WGFS Dialogue Workshop on Changing Expectations of Fishery-Based Advice (Co-Chairs: Norman Graham, Cornelius Hammer, Martin Pastoors, and Stuart Rodgers) will be held in March, 2005 at the ICES Headquarters. Fishery-based and ecosystem-based data is needed for multi-fishery, mixed-species forecasts. The objective is to provide a forum to discuss the interaction of WGFTFB, SGFI, WGEKO, and WGFS in formulating requirements and inputs into fishery- and ecosystem-based advice. The Chair of the North Sea Commission on Fisherman Partnerships will be invited to attend. There are a number of new initiatives on fishery-based advice and forecasting that WGFTFB believes it can contribute to regarding ACFM's changing expectations for advice. There is an urgent need to develop dialogue on this topic with several other ICES groups to coordinate the way forward.
- c) The ICES Symposium on "Fishing Technology in the 21st century" 29 October–3 November, 2006 in Boston, USA. The Conveners Chris Glass (USA), Bob van Marlen (Netherlands), and Steve Walsh (Canada) have finalized their theme topics and have so far only one acceptance for the potential 7 Steering Committee members still outstanding. Planning is well under way with an update on theme sessions being available by the end of October, and a first Call for papers by 12 November. A website is being created which will be hotlinked to the ICES website.
- d) The ICES Symposium on Fisheries Acoustics, Science and Technology proposed to be hosted in Bergen in June 2007 with Egil Ona, Norway, Rudy Kloser, Australia, and David Demer, United States as Conveners is awaiting confirmation from ConC next week. This has been discussed at the mid-term meeting of ConC and was postponed to the September meeting.
- e) Two new theme sessions are proposed for the 2006 ASC: 1) a Joint FTC/LRC Theme Session on the Use of data storage tags to reveal aspects of fish behaviour important for fisheries management, Conveners: David Somerton (USA) and Julian Metcalfe (UK); and 2) A Joint FTC/LRC Theme Session on the Spatio-temporal characteristics of fish populations and their environmental forcing functions as components of ecosystem-based assessments, Conveners: François Gerlotto (France), and a representative from LRC.

Draft Resolutions

The Committee approved all existing resolutions drafted by the Chair of the expert groups with only minor changes for the continuing work.

Future meeting locations

FTC expert groups will meet in Rome at FAO Headquarters. In 2006 WGFTFB will meet in an undecided European venue and WGFAST will meet in Hobart, Tasmania.

Concern was expressed that not all expert groups would be able to meet in Australia in 2006. Due to limited travel budgets in many institutes, members felt that for the WGFTFB to meet with the WGFAST in 2006 would potentially result in dilution between the WGFTFB, the 2006 symposium on fishing technology in the 21st century in Boston, and the Annual Science Conference. It was agreed that the WGFAST should accept the offer to meet in Hobart, Tasmania while the WGFTFB should seek a European location. Two possible venues have

been offered, Dublin (Ireland) or Aberdeen (Scotland). The Committee expressed great concern that this should not be perceived as a break in the traditional pattern of always meeting together.

New and ongoing science initiatives

Three presentations were made on new and ongoing science initiatives of the Committee: 1) Technologies used in the MAR-ECO survey of the mid-Atlantic ridge (Olav Rune Godø, IMR, Bergen), 2) NMFS Workshop on underwater video analysis (Dave Somerton, NMFS Seattle), and 3) FTC's role in the new SCOR Panel (Bill Karp, NMFS Seattle).

The presentation on *Technologies used in the MAR-ECO survey of the mid Atlantic ridge* showed that an extensive range of vessels and international institutes had been involved in the survey. A large range of technologies were employed, including synchronized acoustical systems, demersal and pelagic trawls, optical profilers, ROVs, and a number of autonomous Landers. Trawling was conducted at depths of up to 3500 meters, using specially modified instrumentation in order to cope with the depths encountered. Several new species and bottom features were identified.

The NMFS Workshop on underwater video analysis was based on an initiative from the NMFS advanced technology working group. The workshop focused on the increasing use of visual observation techniques. These are used for a number of scientific purposes: for fishery-dependant assessment techniques, benthic habitat mapping, and for the identification of critical habitats, particularly in areas where the deployment of survey trawls is not viable due to topographic conditions. A number of new techniques, both technological and analytical were demonstrated, showing an almost exponential growth in new techniques. The Committee felt that this work was important to various members and should be further explored within FTC. It was noted that there is another EU-funded initiative relating to the use of video techniques for stock assessment of *Nephrops* and scallops and that an approach should be made to the organizers to assess FTC contributions. This project could be addressed in one of the ToRs for the WGFTFB/WGFAST joint session in 2005.

FTC involvement in the SCOR panel – At the most recent annual meeting of the SCOR Executive Committee (Moscow, Russia, October 2003), the Executive Committee approved the transformation of SCOR Working Group 118 on New Technologies for Observing Marine Life to a panel. The Executive Committee recognized that WG 118 provided a valuable service to the Census of Marine Life (CoML) project and to the broader oceanographic community. It was decided to reform WG 118 as a SCOR panel because SCOR working groups are short-term activities whose work is focused on producing a peer-reviewed document, such as a book or special journal issue. The new group may be continued through the life of CoML and will be intended to provide quick advice to CoML projects. The purpose of a SCOR panel on this topic will be to bring to the attention of the international community of fisheries scientists, marine biologists, biological oceanographers, and others the potential benefits of emerging technologies in the detection of marine life and how these can be economically deployed on larger scales.

The Committee endorsed the continuation of Bill Karp as our ICES representative on SCOR and recognized that there was a need for a regular update of SCOR activities from time to time. The Committee recognized that the SCOR work could help the Committee develop a broadbase perspective on the development of ecosystem-based technologies.

Election of new Chair of FTC

The election had 3 candidates from 3 member countries, and François Gerlotto from France was elected to be the new Chair of the Committee. The Committee thanked the outgoing

Chair, Stephen J. Walsh (Canada) for his hard work over the past three years and for the positive changes he has introduced to the operation of the FTC and associated expert groups.

The meeting adjourned at 18:10 hrs on 24 September 2004.