

Fisheries Technology Committee (B)

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Chair: Stephen J. Walsh (Canada)

Rapporteur: David Somerton (USA)

Opening

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

Reports of Working/Study Groups/Planning Groups

Working Group on Fishing Technology and Fish Behaviour (WGFTFB)

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

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

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

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

Working Group on Fisheries Acoustics Science and Technology (WGFAST)

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

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

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

Study Group on Methods for Mesh Measurement Methodology (SGMESH)

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

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

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

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

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

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

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

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

Planning Group on the HAC Data Exchange Format (PGHAC)

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

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

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

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

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

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

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

Consultative Committee and Fisheries Technology Committee business

ICES Strategic Plan and integrated Action Plan

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

Review of the structure of the Fisheries Technology Committee

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

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

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

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

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

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

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

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

Study Group would work by correspondence to finalize its report.

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

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

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

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

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

Forthcoming ICES symposium and Theme Sessions

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

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

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

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

Draft resolutions

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

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

The Committee also noted that:

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

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

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

Other business

New Working Group Chairs for 2004–2006

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

2004 Expert Group meetings

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

Remits of WGFASST and WGFTFB

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

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

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

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

Close

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

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