

Report of the Fisheries Technology Committee (FTC)

Chair: François Gerlotto, France

Rapporteur: Bill Karp, USA

Introduction

Following ConC suggestions the FTC committee meeting was organized slightly differently than in 2005:

- The first four-and-a-half hour session was held on 20 September, at a time with no scheduled scientific theme sessions, letting the ASC participants free to “discover” science committee activities. 22 participants attended the whole session;
- A second four-hour session was held on 21 September. Less participants were present at this session (variable number, from 12 to 17).

The first session was devoted to scientific discussions on the theme of biodiversity and on the restructuring process of ICES. The second session was more specifically focused on the FTC activities during the year and on EG reports.

The higher presence of participants during the first session demonstrated the interest of such an agenda, with no theme sessions scheduled during the SC meeting. Nevertheless, with one exception, no new participants were present. Efforts in communication are still necessary to make the SC meetings attractive to non-members. The suggestion to open a discussion on the theme of the opening lecture seemed extremely fruitful and could be a good way to attract newcomers. It was felt that this opening lecture should be announced to attract newcomers to at least part of the SC meetings.

Opening

Adoption of the agenda

The Chair opened the meeting and welcomed attendees. The FTC meeting gathered 22 participants on the first day, and 17 on the second day.

Arrangements for the meeting

Appointment of Rapporteur

Bill Karp, USA, was appointed as rapporteur.

Committee business

FTC and biodiversity: what is our contribution? The ICES Head of Science asked the committees at the 2006 ASC to devote part of the SC agenda to discussion on the theme of the opening lecture by Dr Carlo Heip on "Marine Biodiversity: the Exploration and Understanding of the Blue Planet". In this domain, the FTC contribution is mainly focused on observation tools and methods. The FTC Chair listed the major sources of information on biodiversity that the committee is potentially able to explore:

- Visual (FAST/FTFB): surveys, specific composition, behavioural research, etc.
- Acoustics (FAST): surveys, behaviour, abundance estimates, etc.
- Fish sampling (FTFB): effect of fishery on communities, surveys, abundance estimates, behavioural research, etc.
- Experiments (FAST/FTFB): measurement of biases related to the different methods, effectiveness of fishing data for biodiversity research, ecosystem approach to fisheries, etc.

Some points were pre-identified for discussion:

- Autonomous observatories for biodiversity research?
- Surveys and stations?
- Adaptation of techniques and tools?
- Experiments?
- Behavioural ecology?

Then each WG presented its own activities focusing on biodiversity questions.

WGFAST and biodiversity

The WGFAST Chair, David Demer (USA) presented an overview of technologies and approaches for studying biodiversity. Necessary technologies included:

- Sensors (e.g. air-borne Light Detection and Ranging (LIDAR), and multifrequency, broadband width, and multibeam acoustics);
- Platforms (e.g. instrumented small craft, Autonomous Underwater Vehicles (AUVs), buoys, and satellites);
- Data telemetry (e.g. underwater modems, gliders, long-range ethernet radio, and satellite links; and
- Data fusion software (e.g. GIS and 4-D analysis) to augment or replace existing ecosystem observations and analyses.

WGFTFB and biodiversity

The WGFTFB Chair, Norman Graham (Ireland) presented an overview of activities developed in WGFTFB applicable for studying biodiversity. Relevant topics included:

- Bycatch & discard;
- Importance of surveys for providing baseline information;
- Concerns regarding catchability of some organisms;
- Effects of fisheries and fishing gears on biodiversity (capture and effect on the substrat).

Discussion

The Committee engaged in an enthusiastic discussion of this topic. Important points and issues discussed included:

- Multibeam acoustics is emerging as a powerful tool for observing and characterizing midwater scatterers. It was suggested that quantitative multibeam data be collected during all surveys to provide baseline information;
- Multifrequency acoustics is another issue allowing species ID. One general comment was that acoustics records all the individuals (animals) from 1 mm to the biggest fish,

but is still unable to clearly identify them. Multifrequency is likely to solve this problem in the near future. Once this is resolved, an acoustic survey is likely to give a quasi-exhaustive overview of the pelagic biodiversity for organisms above the dimensions of 1 mm.;

- The focus on biodiversity will require the ability to detect change. Temporal and spatial scales are important considerations in this context. Also, technologies and tools employed must be able to detect the levels of change considered important. Independent autonomous platforms (AUV, buoys, etc.) are potentially able to provide data usable for biodiversity research. It is worth noting that in this field biodiversity and ecosystem approach share the same methodologies of monitoring and survey;
- The need for field experimentation and concerns regarding catchability and monitoring bias were discussed at some length. An important issue is the understanding of behavioural patterns which often organize the biological structure of the communities. Experiments of the effects of fishing gears on the substrate as well as on fish behaviour should be undertaken;
- A discussion on the operational definition of biodiversity for the FTC (e.g. impossibility to observe the microbiological part of the biodiversity) lead to some conclusions: there is a need for boundary (threshold) definitions in order to show clearly what can be observed and what cannot; but this poses the risk of forgetting that arbitrary limits are put in our observation field. We then need to set the limits AND devote part of the activity to exploring what exists beyond these limits. The case of some misunderstandings in fisheries biology due to the idea that fishing data could be accepted as exhaustive ecological information has to be kept in mind;
- The committee concluded that this initiative of following the opening lecture with a discussion inside committee meetings is a fruitful idea, which allowed listing the activities developed by the FTC EGs that could provide information for biodiversity. Besides, the presentations made by the two WGs launched discussions between the different EGs and new ideas were presented that might improve the functioning of the SC. Finally it was suggested that the synthesis of the information from the open lecture, plus the discussions and material from all science committees could be published quickly in the ICES newsletter, showing what the contribution of ICES to this particular scientific question is.

Matters arising from the Consultative Committee and the advisory committees

Note: some of the matters arising from the Consultative Committee and transmitted to SC Chairs during the ConC mid-term session (Copenhagen, March 2006), and especially the results of WGREC, had been presented by the FTC Chair at the WG meetings in Hobart (27 March) and Izmir (3 April) during short “FTC business sessions” in each WG. The discussion at the FTC meeting in Maastricht was a continuation of these preliminary discussions. This experience showed that having a “FTC mid-term session” could be fruitful in the future:

- Meeting venue – concerns regarding out-of-area WG meetings have now been resolved by the Consultative Committee. The Izmir (WGFTFB) and Hobart (WGFAST) meetings were both considered to be especially successful and attracted a large number of international and local participants: FAST – 70 participants in Hobart (including 30 from Australia and New Zealand), and FTFB – 100 in Izmir (including 40 from Turkey), making it the most attended WGFTFB meeting ever;
- A large number of new and young participants;
- Providing new input and knowledge for FTC: in Hobart – invited speakers on southern hemisphere activities (including reports on CCAMLR); in Izmir – topic groups on new fields (fisheries science in Turkey);

- Experience shows the interest of having such meetings outside the ICES area (but not every year!);
- Invitations have been received from Chile and Peru: to be considered in the future;
- A “guideline for venues of meetings” was prepared and presented in Copenhagen by the FTC and LRC Chairs. The guideline has had positive feedback from the Bureau (June, 2006). The guideline should serve as ConC’s internal guidelines and should minimize the cases where the Council will have to interfere.

The restructuring process

The proposals of the Restructuring Group were discussed; general agreement was given to most of the RG proposals, with some exceptions, comments, and suggestions:

- Communication is not a major issue inside the committee, neither at the level of inter-EG communication nor at the level of committee–EG. All the participants agreed that there is no need for any major restructuring of the FTC. A strong concern was voiced on where the methodological and technical activities might be developed if there were only three committees (i.e. fisheries, ecosystem, and environment). Methodological activities are needed inside ICES and are worth a specific structure. Among the 4 proposals of SC restructuring, proposals 3 and 4 were strongly rejected. Members emphasized the importance of ensuring that WGFTFB and WGFASST both report to the same science committee, whatever new structure is selected;
- Communication between EGs and committees, membership, and meeting of committees (ConC and SC). There was a general agreement on these proposals;
- Proposal at the level of communications between EGs. Some concern was expressed at some of the proposals of the RG, especially proposal 1: *"All EGs should set up a list of « clients », including: ICES Head of Science, relevant SC Chair, relevant AC Chairs, Chairs of any linked EG"*. A potential result of such a proposal is the increase of the volume of ToRs transmitted by all the clients to the EG; in this case the workload of the EGs could increased in such a way that they would not be able to respond;
- Continuity in the SC chairmanship. In order to avoid any difficulties when a new Chair is elected, ConC should consider whether a SC Chair could be elected for an overall period of 4 years, the first year as “Vice-Chair” of the SC, permitting him/her to be present at the ConC meetings as observer during the last year of activity of the former Chair, and the three following years as Chair, which is the present situation.

Integrated ecosystem advice

There is a continued request from the Consultative Committee for new ToRs to promote ecosystem and fisheries advice:

- WGFTFB does not consider this to be a problem – much of the WG work is now of an advisory nature;
- There was no direct input from WGFASST, although it was recognized that the production of *Cooperative Research Reports* by the WG is in part an advisory activity (e.g. the CRRs on noise of research vessels; on survey design; on acoustic seabed classification; etc.) Another potential role of the WGFASST deals with quality control and quality assurance for acoustic data.
- Some cases of lack of information and involvement of FTC expert groups in advisory activities were presented, especially that on the noise effect on marine life, where WGFASST should have been contacted at the beginning of the advisory process, rather than at the last moment. Due to this lack of communication, the WGFASST Chair

disagreed with some of the general conclusions of the report that do not represent the general opinion of the WGFASST on noise effects.

Discussion – the future of FTC in an ecosystem approach to fisheries

The organization of the FTC stems from the time of “single-stock analysis”. An ecosystem approach to fisheries requires a different type of organization, particularly a higher integration of the research already developed inside the FTC with the inclusion of new fields of research. Two major questions were discussed: the overall organization of the FTC, including the Joint Session, and the inclusion of new techniques and methods in the EG activities.

- 1) **FTC organisation.** The WGs of FTC act more as “sub-committees” than as classical ICES working groups: both WGs are normally attended by between 50 and 100 participants! This explains why their role as “mini-symposia” is important: they are forums of discussion for the scientists of the committee. The work is mainly done through EGs with limited life and precise ToRs: study groups with a duration of 3–4 years and topic groups with even shorter duration. There are no real working groups in the FTC, which explains the difficulty in creating new WGs. The question therefore was: are new WGs necessary? Study groups inside the “sub-committee” may be the only consistent solution. The Joint Session is acknowledged as important and has been fruitful as a forum for discussion across WGs; nevertheless, its organization around a specific ToR has not always given good results. Identifying a Chair for this joint session has often been a problem. For these reasons it was considered to transform the joint session into a committee mid-term session.
- 2) **Inclusion of new EGs for studying new techniques and methods.** The participants identified a series of new techniques and methods which should be considered by the FTC, and principally optical imaging, other remote sensing observation tools, tagging methods and techniques, unaccounted fish mortality, fish behaviour, and fish physiology. Concerning these two last items it was discussed whether these disciplines might be better considered in other committees. A proposal was to circulate a questionnaire inside ICES in order to define the needs of research in fish behaviour. In the particular case of the FTC, the word “behaviour” should be understood as “fish response to stimuli from fishery activities”, and not as a behavioural ecology topic. Nevertheless, the term “behaviour” appears almost in every EG of every SC working on ecosystem, and some structure should be defined. Physiology is another activity which is likely to grow in importance, e.g. effects of noise on the physiology of fish, effect of global warming, etc. Concerning the other disciplines, no clear agreement on the elaboration of new WGs was obtained. It seemed that the participants would rather prefer to expand the topics of the two existing WGs, and for instance change the Fisheries Acoustics Science and Technology Working Group into a “WG on Remote Control Methods for Observation of Marine Ecosystem”, which would include optical and other methods that would be more specifically studied in dedicated SGs.

Forthcoming symposia and theme session topics

A list of recommendations and activities for 2007 extracted from the EG reports is presented in the table below. For each of these recommendations the question whether a theme session was worth being organized was discussed.

Table 1. List of recommendations from FTC expert groups, theme sessions, and new symposia.

Recommendations & activities 2007		Theme session	Symposium
Fishery dependent data	FAST		2010
Nephrops selection	FTFB		
Fish pots for commercial fisheries	FTFB		
Catch composition and analysis	FTFB		
Survey trawl standardization	FTFB		
Fish behaviour & demersal trawls	FTFB		
Fishing behaviour and management advices	FTFB		
Mediterranean fisheries	FTFB		
Fish response to noise of vessels	FAST	2007	
Fisheries optical technologies	FAST	2007	
Species identification techniques	FAST		
Ghost fisheries	FTFB	2007	
Herring characteristics in the Baltic	FAST	2007	

Four theme sessions were proposed for 2007 and none for 2008 (see table above). 2008 is the year of the Fisheries Acoustics Symposium and most of the work will be presented there. The forthcoming symposia are: Boston, November 2006 (fisheries technology), Lima, November 2006 (Humboldt Current system), and Bergen, June 2008 (fisheries acoustics).

- Update from Bob van Marlen on Boston 2006 Fishing Technology Symposium: Everything is on track. Participants have been encouraged to visit the website of the symposium through the ICES website.
- 2008 Acoustics symposium in Bergen. Report from Egil Ona and David MacLennan. The website will be published by the end of 2006. The co-conveners reminded the Consultative Committee and the Publications Committee that there is a need for a 500-page volume of proceedings, which means a set of free extra pages. ConC and Pub. Comm. received this request favorably as the conveners of the symposium accepted to delay publication from 2007 to 2008, requiring a series of difficult discussions and decisions to change agreements already signed with institutions in Bergen.
- FTC support for the 2010 International Symposium on Collection and Interpretation of Fishery Dependent Data. Possible conveners are Bill Karp and Norman Graham (and others). Karp prepared a preliminary proposal for submission to FTC, LRC, and RMC. The idea is to obtain preliminary (non-binding) support for the topic and space in proceedings publication in JMS. Bill Karp presented a brief overview for committee Chairs and possible Consultative Committee discussion in 2006. A formal proposal will be drafted in Dublin.

Presentation and adoption of reports and draft resolutions

The detail of the resolutions and terms of reference of each EG is given in a separate document and synthesized in Table 2.

WGFAST Expert Groups

FTC:01 Working Group on Fisheries Acoustics Science and Technology (WGFAST)

- Report and terms of reference were approved by the FTC (see document on ICES website).

FTC:02 Study Group on Collection of Acoustic Data from Fishing Vessels (SGAFV)

- Final year of 3-year project;
- Editor has all draft chapters in hand;
- CRR manuscript to be submitted to Publications Committee by 31 January 2007.

FTC:03 Study Group on Acoustic Seabed Classification (SGASC)

- Final editing of CRR is now being carried out;
- Expect manuscript to be submitted soon.

FTC:08 Study Group on Target Strength Estimation in the Baltic Sea (SGTSEB)

- It was agreed that there was no need for an oral presentation of the report which has been posted on ICES website. Report and terms of reference were approved by the FTC (see document on ICES website). A theme session on Baltic herring is proposed for 2007.

FTC:09 Planning Group on the HAC Data Exchange Format (PGHAC)

- It was agreed that there was no need for an oral presentation of the report which has been posted on ICES website. PGHAC, as a surveying group, will continue its activities in 2007;
- Adoption of draft resolutions – WGFAST and related EGs;
- Report and terms of reference were approved by the FTC (see document on ICES website).

WGFTFB Expert Groups

FTC:06 Working Group on Fisheries Technology and Fish Behaviour (WGFTFB)

- Report and terms of reference were approved by the FTC (see document on ICES website).

FTC:05 Study Group on Survey Trawl Standardization (SGSTS)

- Report and terms of reference were approved by the FTC (see document on ICES website).

FTC:04 Workshop on Unaccounted Fishing Mortality (WKUFM)

- It was agreed that there was no need for an oral presentation of the report which has been posted on ICES website. Report and terms of reference were approved by the FTC (see document on ICES website).

FTC:07 Study Group on Unaccounted Fishing Mortality (SGUFM)

- It was agreed that there was no need for an oral presentation of the report which has been posted on ICES website. Report and terms of reference were approved by the FTC (see document on ICES website);
- Adoption of draft resolutions – FTFB and related EGs.

Other business

Discussion of the joint session (to be re-named “FTC mid-term meeting” from 2008):

- WGFTFB and WGFAST will be hosted by BIM in Ireland, 20–27 april 2007. They will have a joint session, chaired by Emma Jones (Aberdeen).

Closing

Table 2. List of FTC Expert Groups and activities.

NAME OF EXPERT GROUP	NEW	CONT.	END	CHAIR
WGFAST – Fisheries Acoustics Science and Technology Fish behaviour in response to vessels Survey techniques epibenthic, epipelagic, shallow spp Spp ID techniques SG reports		X		Rudy Kloser (Au)
WGFTFB – Fisheries Technology and Fish Behaviour WGECO review and Crangon shrimp beam trawling TG Application fish behaviour for sp separation in demersal trawl TG Mediterranean fisheries TG definitions and classification Fishing gear TG Fishing technologies issues/expertise	X X	X X X X		Dominic Rihan (Ir) P. He (USA), M. Pol (USA) A. Sala (It), J. Sacchi (Fr), E. Massuti (Sp) J. Waldemarsen (No), W. Theile (FAO) D. Reid (UK), D. Rihan (Ir), N. Graham (Ir)
WKNEPHSEL – <i>Nephrops</i> selection	X			Dominic Rihan (Ir)
SGPOT – Development of fish pots for commercial fisheries and survey purposes	X			Bjarti Thomsen (Faroe)
SGCOMP – Catch comparison methods and analysis (FTFB)	X			Andy Revill (UK), Rene Holtz (Dk)
SGSTS – Survey Trawl Standardization (FTFB-FAST)		X		David Reid (UK)
SGFARV – Fish avoidance of research vessels (FAST)	X			François Gerlotto (Fr), Julia Parrish (USA)
SGFOV – Fisheries optical technologies (FAST)	X			E. Tenningen (No)
JAFTB – Joint Workshop FAST/FTFB		X		E. Jones (UK)
PGHAC – HAC common data exchange format (FAST)		X		L. Berger (Fr)
SGTSEB – TS Baltic herring (FAST)			X	J. Horne (USA)
SGAFV – Acoustics from fisheries vessels (FAST)			X	B. Karp (USA)
SGASC – Acoustic Seabed Classification (FAST)			X	J. Anderson (Can)
SGUFM – Unaccounted Fish mortality (FTFB/FAST)		X		Mike Breen (UK)
WKUFM2 – Unaccounted fish mortality (FTFB/FAST)	X			Mike Breen (UK)

WG = Working group SG = Study group WK = Workshop PG = Planning group TG = Topic group J = Joint session