

Report of the Fisheries Technology Committee (FTC)

Chair: Francois Gerlotto, France

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Report

The two working groups (Chairs: WGFASST Rudy Kloser, Australia; WGFTFB Dominic Rihan, Ireland) and their joint workshop (Co-Chairs: Emma Jones, UK and Eric Tenningen, Norway) met in Dublin, April 2007 to address their respective ToRs (see FTC resolutions). The audience was around 70 participants for each WG and 90 for the joint workshop.

WGFAST:

- Work on ToRs;
- Presentation of the final versions of CRR 286 and 287;
- Initiate the work of two new study groups, SGFOT and SGFARV;
- Provide an update on plans for the ICES SEAFACETS symposium which will be held in Bergen in June, 2008.

WGFTFB:

- Work on ToRs;
- WKNEPHSEL met in February in Aberdeen and reported to ICES;
- SGPOT met in Dublin for the first time in April 2007;
- SGSTS met in Galway in April 2007;
- Based on their common focus on the North Sea Crangon Beam Trawl Fishery, WGFTFB forged links with WGECCO and produced a joint report on the ecosystem impacts of this fishery. WGFTFB members attended the WGECCO meeting in 2007 and further collaboration is planned in 2008.

Joint workshop:

- Analysis of optical technologies for ecosystem and gear monitoring;
- Report of SGFARV activities.

FTC mid-term meeting

A meeting of all the EG chairs was held after the joint workshop, and it was decided that this mid-term meeting would be held on an annual basis, either during the joint workshop to engage a wide audience when the two WG meet in the same place, or through an EG chair meeting during the meeting of one of the two WGs.

Highlights

WGFTFB

The links between WGFTFB and FAO have been reinforced by the participation for the third time of scientists from countries outside the North Atlantic, and from the Mediterranean in particular. A representative from GFCM attended the WGFTFB meeting and a topic group carried out a review of technical measures in different Mediterranean countries in collaboration with GFCM. The importance for the Mediterranean countries to get linked with the ICES community has been demonstrated and it is likely that stronger involvement of FTFB in the analysis of fishing gears and fishing activities in this sea will be required. This

initiative could be viewed as a model for other EGs which could bring important support to Mediterranean marine research.

One highlight among the different activities of FTFB is the newly-established SGPOT (Chair Bartji Thomsen, Faroe Islands). This is an important SG in an EAF perspective because it explores possibilities for replacing gears that impact the environment with others (pots) that are environmentally friendly. SGPOT is a typical FTC study group, where research covers a wide scope of FTC relevant disciplines (fishing gear technology, fishing effort and catch, selectivity, fish behaviour, monitoring, potentially acoustic and optical sensors, impact on the ecosystem, etc.).



Figure 1. Photograph of a cod pot. These fishing gears are among those with the smallest impact on the environment. They present a great number of advantages (quality of fish caught, selectivity easy to establish, easy to use, low cost, etc.). Their main drawback is that they cannot be deployed on any species, and are mostly if not exclusively adapted to high-cost species (photo Peter Monro).

WGFTFB devotes significant effort to the transfer of information to Advisory EGs. In 2007, advice was provided to 13 separate assessment and advisory working groups. Linked to this activity, two proposals were submitted to FTC for new study groups. These consisted of a proposal on combining gear parameters into effort and capacity metrics (recommendation from AMAWGC) and a proposal to re-form SGUFM into a new WG on Quantifying All Fishing Mortality.

WGFAST

Under the auspices of the WGFAST working group, two *ICES Cooperative Research Reports* were completed and submitted for publication in 2007.

The first, titled "Collection of Acoustic Data from Fishing Vessels" represents the input of experts from 12 countries over a three-year study group term. It provides a detailed synthesis of the topic and concludes with thirty-nine principal findings and recommendations.

The transference of the acoustic method from dedicated research platforms to fishing vessels represents a major evolution of the science. Apart from the technical characteristics of using acoustics on industry vessels, the report includes a chapter detailing cooperative research with industry. Acoustic methods are now used throughout the world to estimate biomass of commercial species, characterize the distribution of pelagic organisms in relation to environmental conditions, understand temporal and spatial variability in patterns of distribution, elucidate interactions among species, and, in some cases, characterize environmental conditions (such as substrate type) directly. Fishery managers often require

near real-time information on stock distribution and abundance to support in-season decisions regarding opening and closing areas for fishing; because acoustic data can be collected and interpreted rapidly, it is particularly valuable for this purpose. Acoustic methods can be used to address a broad range of scientific and management objectives, and, whereas in the recent past it was difficult to deploy scientific-quality acoustic instruments from fishing vessels, this is no longer the case. Fishery scientists throughout the world are now using fishing vessels to collect acoustic data in support of multiple objectives. This approach has been successful in many instances, and often the cooperative (industry/agency) nature of the work brings additional benefits. In fact, some types of objectives can only be addressed through the use of acoustic systems installed on fishing vessels (e.g. improved characterization of fishing effort, studies of fish/fishery interactions).

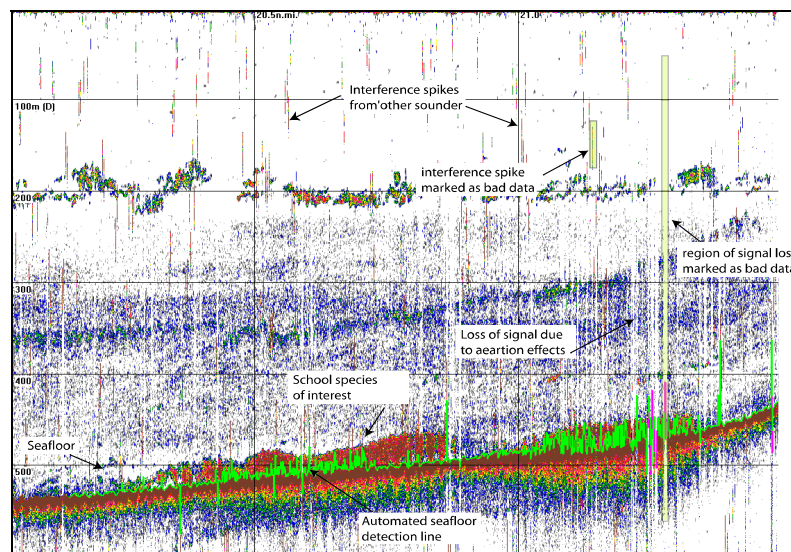


Figure 2. Example of a “poor quality” echogram highlighting most of the types of degraded data likely to be recorded on fishing vessels with no scientist aboard. The major causes of degradation are associated with weather conditions (e.g. air bubble blocking, bottom-detection errors, and pitch and roll impacts). Tools exist for automatic identification and extraction of these types of data. It is interesting that, in general, so much data are collected during these types of surveys that the results remain valuable even when significant proportions must be discarded.

The second CRR is entitled, “Acoustic seabed classification of marine physical and biological landscapes”. This 225-page report provides an overview of the major issues and applications in this field and a comprehensive review of the technologies and techniques used to investigate them. Acoustic technology and classification science is rapidly evolving to meet the needs of nations to manage and conserve coastal resources. As such, this report must be seen as representing a snap-shot of the discipline at this point in time. Although we anticipate that new developments will occur regularly and that this subject must be revisited in the future, we hope that this document will be seen as a valuable and comprehensive documentation of current understanding and will provide a basis for the coordination of developments in this field.

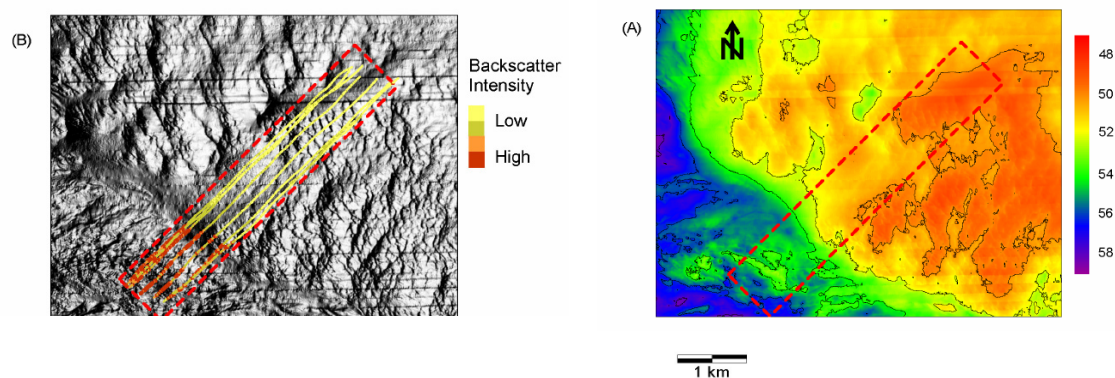


Figure 3. Example of seabed recording and classification using different tools (left: multibeam sonar image). Results in the CRR 287 gather information on the bathymetry, the seabed type, substrate quality, precision of results, survey design, etc. (from CRR 287).

The ICES 2008 Symposium on the Ecosystem Approach using Fisheries Acoustics and Complimentary Technologies (SEAFACETS) will be held from 16–20 June, 2008 in Bergen Norway. The conveners for the meeting are Egil Ona (Norway), Rudy Kloser (Australia), and David Demer (USA). This symposium represents a major opportunity to focus international attention on the use of acoustic and complimentary technologies addressing ICES needs in applying the ecosystem approach to marine management issues. Two hundred and fourteen abstracts have been submitted to the conveners for consideration as oral or poster presentations during the symposium.

Thoughts on the nature of FTC and on what it does (or should do)

The Fisheries Technology Committee (as currently and historically constituted) has a rather different structure from the other SCs; this is because, the major objectives of this Committee are somewhat unique in the ICES context. The FTC is constituted of two working groups, each with a membership of 70–100 scientists. These two WGs (WGFTFB: Fisheries Technology and Fish Behaviour; and WGFASST: Fisheries Acoustics Science and Technology) meet annually, usually in April. The WGs generally meet simultaneously at the same location on alternate years; on these occasions a "joint session" on topics of common interest is usually organized. The two WGs act in part as forums or "mini symposia" where the state-of-the-art of the technologies and methods of interest to FTC are presented and discussed. The bulk of the "production" of FTC is achieved through smaller EGs, mainly study groups working on average for 3-year periods, permanent planning groups, or workshops and topic groups which usually complete their work within one year. Another major output is through the organization of ICES international symposia (FTC organizes on average one symposium every second year).

The reason why the WGs have evolved as "subcommittees" and produce "mini symposia" is linked to the mission of FTC. As the main focus is on research on technology to be used in fisheries and ecosystem science, "standard ICES" permanent working groups are not appropriate. Instead, a structure has evolved whereby the "WG/subcommittees" establish temporary expert groups to study and describe new technologies and methods, evaluate their potential application in fisheries and ecosystem science, and provide associated advice. The topics for these temporary expert groups are generally identified and defined through the mini symposium process. These EGs generally require three to four years to complete their work and report their findings and recommendations in a CRR. Upon completion of their work, EGs are dissolved. This mini symposium process has evolved over the years and has become critical to the success of the WGs and FTC itself. A small number of permanent groups exist to support specific technical needs; a typical example is the Planning Group on the Format of

Acoustic Data (PGHAC), which ToR is to establish and maintain a common international format for acoustic data that is able to accommodate advances of technique and to deliver recommendation on these acoustic data structures to acoustic instrument manufacturers.

The FTC has two major goals:

- Develop, report, and advise on research on science and technology relevant to sustainable exploitation of the ecosystem. This includes most aspects of the exploitation of living marine resources but primarily concerns fishing techniques, gear selectivity, measurements of gear characteristic, analysis of the effects of fishing gears on the ecosystem, and associated topics.
- Develop, report, and advise on research on science and technology for ecosystem monitoring. Historically, this activity has focused almost exclusively on acoustic approaches; this perspective is now expanding to include optics and other technologies, and to consider requirements for integration of data derived from multiple technological sources.

In order to address these two major goals, FTC has established two WGs. The work of WGFTFB is primarily (but not exclusively) in support of the first goal while the work of WGFASST is primarily (but not exclusively) in support of the second goal. When issues and questions that concern both goals arise (e.g. fish behaviour, technologies of common interest), a joint session of the two WGs is often organized to address the topic.

What is and what is not a “FTC activity”. In order to define which ICES issues and concerns should be directed to FTC, it is important to define an “FTC activity”. Because FTC is directed to develop and report on research on technology and methodology, the role of the committee should be restricted to these objectives. **The output of a FTC EG is limited to the provision of information or advice on the use of techniques and methods to be deployed in the fields of sustainable exploitation and ecosystem monitoring. Tasks which involve analysis of ecosystem or fishing data (even if they are obtained with these methods) are beyond the scope of this SC.** For instance, FTC is appropriately directed to the development of designs for conducting surveys with acoustic devices; analysis of the results of routine surveys, even if they are carried out in accordance with FTC recommendations on survey design, would not be conducted by FTC. This definition should be used as a guideline to define which activities should be assumed by FTC (or its successor).