

REPORT ON THE JOINT SESSION ON METHODS OF STOCK ABUNDANCE ESTIMATION  
INDEPENDENT OF FISHERY DATA AND THEIR APPLICATIONS

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1. A Joint Meeting on the above subject was held on 10 October by the Pelagic and Demersal Fish Committees, the Baltic Fish Committee, and the Fish Capture Committee. As a result of the large number of contributions on fishery acoustics, the entire morning session of this meeting was devoted to this subject.
2. The Convenor of the Planning Group for the Symposium on Fisheries Acoustics to be held in 1982 presented the report of a meeting held in May 1980 (B:10).

The Convenor particularly referred to the recommendations given by the Group that member countries should send statements about their: 1) methods of physical calibration, 2) information on standard targets in use and on any plans in developing better targets, 3) cruise reports giving estimates of precision, day/night effect, and asked the meeting to accept these recommendations.

The Committees expressed their appreciation of the work carried out by the Planning Group and approved the programme for the Symposium and recommended that a further meeting of the Group should be held in Nantes in May 1981 (see Recommendation).

3. Six papers were presented on acoustic methodology. Contributions on target strength measurements (C.M.1980/B:19 and B:20) indicated results at variance with those of some previous experiments. Another paper (H:51) described measurements of tilt angle in capelin. Discussion on a theoretical treatment of equivalent beam-angle estimates (B:13) showed the need for experimental data for an evaluation of this problem. Another theoretical paper (B:17) on the range-dependence of target strength values was reported to be based on an invalid attenuation coefficient. Discussion of all these contributions and a review paper dealing with methodological experience in the northwest Atlantic showed a need for answers to a number of fundamental questions, particularly in relation to the variability of target strength estimates and their dependence on fish behaviour. The paper (B:23) on acoustic data in large-scale surveys stressed the need for more standardized methodology and better survey design. The paper gave rise to lively discussions and several speakers stressed the need for information about biology and behaviour of any fish stock before planning extensive acoustic surveys for the purpose of stock abundance estimates. Several examples of promising results in recent years were given, e.g., capelin and Icelandic herring.
4. The Report of the Planning Group on Herring Acoustic Surveys was presented together with a Report on the 1980 Survey (H:3 and H:24). After consideration of the results and outstanding problems, the Pelagic Fish Committee agreed on a recommendation that a further survey should be carried out in the Orkney-Shetland area in the summer of 1981, and that a meeting of biologists and acoustics experts should be convened at Aberdeen early in 1981 to discuss the methodology and to plan the 1981 survey (see Recommendation).
5. A Report of the Herring Acoustic Survey in the Skagerrak in 1979 (H:54) showed that frequent sampling of the echo recordings is important in order

to allocate the acoustic data to different species such as herring and sprat. A contribution on the Icelandic summer-spawning herring (H:34) compared the results of acoustic surveys with those from analyses of fishery data, and the report was an excellent example of the use of acoustic stock abundance estimates for monitoring the herring stock.

6. Five contributions were presented on acoustic surveys for sprats. Three of them (H:6, H:41 and H:44) described a coordinated survey carried out in the North Sea early in 1980. The Pelagic Fish Committee recommended that a coordinated survey should also be carried out in 1981, and plans for the surveys should be considered at the meeting of the Acoustic Survey Planning Group in Aberdeen in January (see Recommendation). Two further contributions on sprat were concerned with the Baltic sprat stock (J:16, J:17).
7. Three contributions were presented on blue whiting surveys (H:18, H:42, H:61). One dealt with surveys in 1979 and two described independent surveys of the spawning area in 1980 and demonstrated the difficulty of comparing estimates made by independent workers because of differences in methodology and partly in the way the results are expressed, a problem also highlighted by the blue whiting contributions based on different values of target strength. In view of the clear need for standardization of calibration and reporting, it was agreed that the Planning Group for the Acoustic Symposium should frame the required recommendation at its next meeting.
8. Two papers were presented on capelin acoustic surveys - one from Icelandic-Jan Mayen area (H:63) and one from Newfoundland (H:51). The latter gave a review of previous surveys and discussed future plans.
9. A proposal for a Working Group to examine and analyse acoustic fish abundance surveys was discussed at length, the proposed aims of such a group being to enhance the work of the Planning Group for the Acoustic Symposium and to facilitate discussion of the problems presently being faced in the application of acoustic methods in fisheries research. Although the formation of a Working Group received some support because of the acknowledged need for a forum of this sort, the consensus view was that it would be premature. It was also pointed out that Working Groups with similar aims already exist, one relevant to the work of the Council being that formed by the FAO Advisory Committee on Marine Resources Research. It was therefore agreed that the Planning Group for the Acoustic Symposium should be asked to continue its work and where necessary to give advice on problems involved in acoustic surveys. In addition, encouragement was given to participate in existing Working Groups sponsored by other bodies.
10. In the discussion of a contribution evaluating a series of acoustic surveys (H:46), it was concluded that the outstanding problems are those of target strength measurement and calibration procedures. A further general problem is the lack of clear objectives in many of the acoustic surveys currently being carried out.
11. Only three papers dealing with other methods than acoustic surveys were presented. One paper was presented on a new approach to the use of larval survey data in the assessment of herring stocks (H:37) and two papers (G:38 and G:44) demonstrated the potential use of research vessel trawling data in assessments. The hope was expressed that these approaches would be evaluated more fully for use in assessment work on the relevant species.

The Fish Capture and Pelagic Fish Committees recommend, that:

- II (1)            the Planning Group for the Symposium on Fisheries Acoustics, convened by Mr R A Craig, should hold its second meeting in Nantes during the week 25-29 May 1981 to coincide with the Working Groups of the Fish Capture Committee, to finalise preparations for the Symposium and in order to define standard targets and recommend calibration procedures.