International Council for the
Exploration of the Sea

C.M.1975/B:30

GEAR AND BEHAVIOUR COMMITTEE

Chairman: Mr P.J.G. Carrothers
Rapporteurs: Mr J.J. Foster
Dr G. Kuroc

Sessions were held on 30 September and 1 and 3 October 1975.

Committee membership and attendance were checked, substitutes for this meeting were identified, and a representative from the Democratic Republic of Germany was welcomed for the first time. All persons present were invited to participate in discussions. The agenda was adopted.

1. Vote of thanks to retiring Chairman

The meeting unanimously voted an expression of sincere appreciation to Mr J.G. de Wit for his substantial contribution to the Gear and Behaviour Committee during his three-year term of office as Chairman and noted with regret that he was unable to attend these sessions.

2. Chairman's introduction

Problems relating to the distribution of documents were outlined and compensating action described. The availability on request of translation services between French and English and of audio-visual for the presentation of papers were noted with thanks. The suggestion from the Consultative Committee to identify a dominant theme for each meeting was put forward.

3. Administrative report

Recognising that the contents of the Administrative Report (C.M.1975/B:1) were already seven months out of date, member countries were given the opportunity to outline more recent progress and new developments. It is hoped these activities will be reported in the formal submissions for 1975. The usefulness and quality of the report were then discussed in considerable detail. Countries with diverse organisations conducting work of interest pointed to the extreme difficulty in collecting information on all activities and to the inevitably large size of a comprehensive report. They considered their present submissions to be inadequate and of limited value. Countries with more restricted activities reported their submissions to be comprehensive and considered the report as a whole to be worth the effort of preparing it. For the report to fulfil its function more effectively, the Committee members were requested to advise more comprehensively of plans for future work and, once again, to report on the types of materials in commercial use in trawls during the year in question.

It was agreed that an Administrative Report for 1975 would be prepared under these wider terms of reference, on the understanding that countries with many contributing organisations attempt to make their submissions more representative and as comprehensive as practical.

4. Working Group reports

4.1. Fish reaction

In the absence of the Convenor, the report (C.M.1975/B:20) was presented by Dr G. Kurc. He listed the different dominant themes used for each of the annual meetings since the Working Group was formed, including electrical fishing for 1975 and reassessment of methods used and proposed for research on fish reaction to fishing operations recommended for 1976. He noted in particular the valuable reports from members on progress in this field in their respective countries.

4.2. Engineering

In the absence of the Convenor, the report (C.M.1975/B:2) was outlined by Mr G. Vanden Broucke. Unfortunately four papers from Norway which the report promised for the Committee meeting could not be provided for reasons beyond the control of the authors. However, Mr S. Olsen advised that two of them were available in Norwegian on request and that all would eventually be published in English. Dr Treschev advised that his manual on the Application of the Swept Volume Method for Measuring Fishing Effort had been prepared but only a few copies are available.

4.3. Electrical fishing

The report (C.M.1975/B:19) on the special joint session on Technical Aspects of Electrical Fishing was presented by its Chairman, Mr G. Vanden Broucke, as a supplement to both the above Working Group reports. Much useful information was exchanged among biologists and engineers on an informal basis and another similar joint session was suggested for two to three years hence as the technology develops. Much work is still required on pulse generators and power supplies suitable for use in the marine environment.

4.4. Comparative fishing

The report was presented by the Convenor, Mr J.A. Pope. It was unanimously agreed that the work had considerable value and that every effort should be made to publish the findings as soon as possible, including a limited editing and the inclusion of worked examples. Members were asked to send comments on the existing reports (C.M.1974/B:14 and C.M.1975/B:27) to Mr Pope with example data by March 1976 (see Recommendation) for inclusion in the final report. A reminder will be issued by the Chairman. It was agreed that Mr Pope and Mr Bohl should meet to prepare the final draft (see Recommendation).

The question of comparing different types of gear was discussed. Although this was recognised to be important, priority was on publishing existing studies, and the Committee deferred consideration of this wider issue to a future meeting.

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4.5. Working Group on Data Collection and Processing in Fish Capture Research

The Working Group Report (C.M.1975/B:13) was presented by Mr J.J. Foster. Two areas of work were considered in detail: a) the data index scheme designed to help keep scientists informed of work in initial and later stages of progress and b) establishment of standard procedures for measuring, collecting and analysing data through practical collaboration.

Although the Committee recommended at the previous Statutory Meeting that the data index scheme should be operated for a trial period, the Council postponed consideration of the scheme until relevant codes were agreed with other interested parties within ICES.

The Committee reviewed the need for the system and following considerable discussion of advantages, disadvantages and alternatives again recommended that the scheme should be given a trial (see Recommendation). It was agreed that changes in the forms (and instructions for their completion) to accommodate new and agreed codes should be made by the Working Group (see Recommendation).

A separate meeting on codes was attended by representatives of the Hydrography, Statistics, and Gear and Behaviour Committees under the chairmanship of the Chairman of the Statistics Committee. It was found that the coding needs of the present index scheme should be met by existing codes now within ICES. It was decided that the Working Group's Convenor is merely required to consult with the Convenor of the ADP Working Group, Mr J.A. Pope, to ensure that the codes for area, country, fish species and fishing gear were in line with current ICES practice. Codes for vessels and institutes do not require modification in the scheme in those respects at this time.

Practical collaboration in standardising measuring equipment, data collection etc. had already been started on an informal basis. Initially this was by the exchange of information and data. Canada, FRG, Netherlands, UK and France were already participating and the Belgian member asked for his country to be included immediately (see Recommendation).

Both the indexing scheme and the pilot project largely involve postal correspondence, but in order to monitor progress, sort out outstanding common difficulties and formulate standard procedures in data collection/processing etc., a further meeting of the Working Group is recommended (see Recommendation).

It was decided that the Council be advised for budget purposes of the possible need for computer time and for an appropriate key-word system for proper implementation of the Data Processing Scheme in the future.

4.6. Sound and vibration in relation to fish capture

The Working Group Report (C.M.1975/B:29) was presented by Mr J.J. Foster in the absence of the Convenor. It had not been possible to cover the

main business proposed for the Working Group Meeting because the dates had clashed with the relevant cooperative work. However, opportunity had been taken to discuss progress in this field by member countries. A summary of this discussion is included in the Report. The Working Group also paid special attention to the outcome of the Symposium on "Sound Reception in Fish" at Utrecht University, 16-18 April 1975. Acoustic methods in fish behaviour studies had been discussed, especially in relation to obtaining direct verification of sound-stimulated behaviour.

The Working Group had suggested that a further meeting should be arranged to discuss the cooperative work, but it had since transpired (largely due to adverse weather) that limited results had been obtained. France has planned an extensive project involving sound generated by 20 or more tuna vessels and the Working Group recommended that this and a further survey of the use and development of acoustic devices required a further meeting of the Working Group.

The Chairman indicated that the Convenor (Dr A.D. Hawkins) of the Working Group had now suggested that the work could be taken over by the Working Group on Reaction of Fish to Fishing Operations. However, it was agreed that a further (final) meeting (see Recommendation) should be arranged. All members of the Working Group would then have the opportunity to reconsider how future work in this field should be initiated and monitored.

4.7. Future plans

The Fish Reaction and Engineering Working Groups were recognised as fulfilling the continuing need for forums for the informal exchange of contemporary technical information between experts in their respective fields and for the coordination of research and development between member nations, in addition to their continuing responsibility to provide technical advice on request for the Liaison Committee. The Comparative Fishing, Data Collection, and Sound and Vibration Working Groups each have a specified assignment and can expect to be dissolved on completion of their assignment.

It was agreed that the experimental joint Working Groups' Meeting in Ostend in April 1975 was a success and that the Working Groups should meet again, in Hull, England, during the week 29 March to 2 April 1976, coordinated by the Committee Chairman as follows (see Recommendation):

1. The Working Group on Research on Engineering Aspects of Fishing Gear, Vessels and Equipment, convened by Mr J.G. de Wit to discuss technical aspects of fishing gear, fishing vessels, and fishing methods and to receive from Dr Treschev his manual on the "Application of the Swept Volume Method for Measuring Fishing Effort".

2. The Working Group on Reaction of Fish to Fishing Operations, convened by Dr C.S. Wardle, to appraise existing and new methods used to study the reactions of fish to fishing operations.

3. The Working Group on Data Collection and Processing in Fish Capture Research, convened by Mr J.J. Foster, to monitor implementation of the Data Index Scheme and standardisation of data formats and instrumentation for effective collaboration in fishing gear research between member countries.

4. The Working Group on Research on Sound and Vibration in Relation to Fish Capture, convened by Mr A.D. Hawkins, to discuss relevant aspects in the measurement of noise characteristics of tuna vessels and the current use and development of acoustic devices used for examining fish behaviour, and to consider transferring its terms of reference to the Fish Reaction Working Group.

   The joint Engineering/Behaviour session on electrical fishing in Ostend was recognised as being successful and other topics which may be considered for similar treatment include long-lining, tags for tracking, and the effect of the offshore petroleum industry on fishing operations.

5. Other reports

The report by Dr S.J. de Groot on the ad hoc meeting on the design and practical operations of research aquarium systems held in Texel, Netherlands, 7-10 April 1975, was drawn to the attention of the Committee. Unfortunately, the author could not be with us to present highlights.

The meeting of the European Union of Aquarium Curators planned for Stuttgart in September 1976 was noted, and those interested were referred to Dr de Groot for more information.

The following report on relevant activities of ISO was presented by the Chairman pursuant to minute 11 of the 1974 Gear and Behaviour Committee meeting, Procès-Verbal de la Réunion, page 60:

The Subcommittee on Textile Products for Fishing nets (SC9) of the Technical Committee on Textiles (TC38) of the International Organization for Standardization (ISO) did not meet during 1974-75. However, the following Draft International Standards were processed editorially and submitted to member countries for postal ballot.

ISO 3090 Netting yarns - Determination of change in length after immersion in water. (approved 1 July 1974).

DIS 3169 Fishing nets - Drawings - General directives. (voting terminated 22 May 1975).

DIS 3660 Fishing nets - Mounting and joining of netting - Terms and illustrations. (voting terminated 13 October 1975).

DIS 3790 Fishing nets - Determination of elongation of netting yarns. (voting terminates 5 December 1975).

The Technical Committee on Textiles (ISO/TC38) held its seventh plenary meeting in London, England, in June 1975. At that time, its Secretariat reported that Germany (Federal Republic of) has relinquished the Secretariat of the Subcommittee on Textiles Products for Fishing Nets (SC9) and that a new Secretariat is being sought.

No word has been received of activities in the Working Group on Testing of Netting Yarns and Netting (ISO/TC 38/SC9/WG1).

6. Classification of trawl-net fibres and twines according to mesh selection properties

The request from the International Baltic Sea Fishery Commission (IBSFC) "on the problems of classifying or grouping trawl net fibres and twines according to their mesh selection properties" was transmitted from the 1975 mid-term meeting of the Liaison Committee to the Gear and Behaviour Committee. This request was considered by the Working Group on Standardisation of Scientific Methods for Comparing Catching Performance of Different Fishing Gear at its meeting in Ostend and a statement prepared. The Working Group statement was discussed by the Gear and Behaviour Committee and a statement approved for submission to the Liaison Committee.

7. Methods for measuring fishing effort

Dr A.I. Treschev advised that only one copy of his manual in English on application of the swept volume method for fishing effort measurement was available for each member country, for ICES Secretariat and for ICNAF. He thus outlined the contents of the manual (11 chapters) and suggested that various points could be clarified by discussions at the next Engineering Working Group meeting in Hull. He encouraged member countries to try the method, using the information in the manual.

The proposals for fishing effort measures by gear category listed in Appendix 7 of C.M.1975/D:6 were introduced by the Chairman on request from the Statistics Committee. Members of the Gear and Behaviour Committee are urged to consider the relative merits of these methods and to submit comments to the next meeting of the Engineering Working Group and of the Gear and Behaviour Committee for the information of the Statistics Committee (see Recommendation).

8. Technical papers

8.1. Fisheries and the petroleum industry

Papers C.M.1975/B:4, B:28 and B:16 were introduced and discussed. The Committee noted that the studies indicated that the sound produced by petroleum extraction equipment could be detected by fish up to 40 miles away.

Studies on the effects of this and other stimuli generated by the petroleum industry on e.g. migration are required. The equipment described in C.M.1975/B:28 might have application in such studies. The Chairman drew attention to similar problems with sand and gravel extraction as referred to in document C.M.1975/E:17.

The potential conflict between fishing gear and oil pipelines and other underwater structures was discussed. It was suggested that this should be made a special subject for consideration by both the Engineering and Fish Reaction Working Groups. Much of the engineering research on this subject is being done outside the fisheries departments by other Government departments and by the oil companies. The objective of the Working Groups' activities would therefore be the exchange and collation of information for reporting to the Committee. It was also recommended that member countries be urged to submit such information to the Council (see Recommendation).

8.2. Fishing technology

Document C.M.1975/B:12 by Mr E.J. de Boer had been discussed in draft form at the Engineering Working Group meeting and the author was unable to attend the Committee Meeting. Thus, the Chairman simply drew the attention of those present to the existence of this document.

Mr Y. Boudreault presented C.M.1975/B:17 on the working prototype of a new system for measuring trawl warp parameters. This presentation elicited considerable discussion.

Document C.M.1975/B:10 was not available at the meeting, nor was the author or his representative present, so the document was dismissed.

The Chairman outlined document C.M.1975/B:15 which proposes a model for bottom-trawl drag as a linear function of hydrodynamic pressure, with a drag intercept generated by ground friction. This model has the advantages that the parameters may be interpreted in terms of trawl construction types of footrope and seabed, and conditions of tow.

Mr Vanden Broucke presented his paper (C.M.1975/B:18) which describes the commercial application in Belgium of the herding principle of Danish and Scottish seines to a pair-trawling operation.

In the absence of Mr R.S.T. Ferro document C.M.1975/B:22 was presented by Mr J.J. Foster. It describes a simplified, two-dimensional model of a mid-water trawl in motion which provides a remarkably good fit to experimental data. Refinements to the model are in progress.

8.3. Fish capture process

Electrical fishing: Document C.M.1975/B:23 was summarised by Mr J.J. Foster. Progress with these studies was noted.

Fishing power: Document C.M.1975/B:7 was presented by Dr A.I. Treschev. The work includes the use of the swept volume method applied to drift-net fishing.

Selectivity: In response to C.Res.1974/4:18, document C.M.1975/B:24 was presented by the author and discussed. Mr S. Olsen indicated that recent Norwegian experiments have shown the selectivity factor for cod was similar in pelagic and bottom trawls. He noted that small cod are often more concentrated in midwater. Dr H.J. Bohl emphasised that such distributions vary according to season and fishing area. It was recommended (see Recommendation) that more comprehensive work should be carried out. The influence of trawling speed needs to be taken into account.

The Chairman drew the Committee's attention to document C.M.1975/K:48.

Papers C.M.1975/B:8 and B:9 were presented by Dr A.I. Treschev. In response to questions on the mortality of fish in the experiments the author stated that the 3% noted in the report referred to all fish - not only those which survived from the cod end. Fishing hauls were of short duration (up to 30 minutes). This is typical for the commercial fishery in the area. Several members remarked that the results might not be typical for other fishing grounds and commercial practice.

The Chairman drew attention to the following relevant papers: C.M.1975/G:3, G:4 G:7 H:33, K:12, K:13, K:17, K:51, and H:52.

8.4. Fish behaviour

Paper C.M.1975/J:6 was presented by Dr G. Kurc. This work is part of a long-term study on the behaviour of Albacore. The feeding behaviour of two populations with different age groups within each was described; it has potential value in selective commercial fishing.

8.5. Population assessment by acoustic methods

Paper C.M.1975/B:21 was presented by Mr J.J. Foster. The advantage of the digital system in signal processing was discussed. In response to questions it was stated the equipment should soon be available for purchase at approximately £3,000.

Papers C.M.1975/B:25 and B:26 were presented by Mr Midttun. Attention was drawn to the various signals produced by different species and sizes of fish within a species. Discussion of the application of the methods revealed outstanding problems of interpretation of the integrated signals for abundance estimation. It was therefore recommended (see Recommendation) that a joint meeting to discuss these problems involving this Committee and other interested Committees (especially Pelagic Fish (Northern) Committee) should be arranged for the next Statutory Meeting.

Abundance estimation of demersal fish presents special difficulties. Useful Canadian work was noted and Mr E.J. Sandeman agreed to supply information on this to the next meeting of the Committee. Other countries were also encouraged to report on this subject (see Recommendation).

9. Communications

The full list of communications will be given in the Procès-Verbal 1975.