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International Council for the
Exploration of the Sea

C.M.1974/D:5
Statistics Committee
Ref: Demersal Fish (N) and (S) Cttees, Pelagic Fish (N) and (S) Cttees

# REPORT OF THE MEETING OF THE WORKING GROUP ON EVENTUAL ESTABLISHMENT OF AN ICES ADP SYSTEM FOR FISHERY STATISTICS

Charlottenlund, 10-14 June 1974

Contents




International Council for the
Exploration of the Sea

C.M.1974/D:5


Appendix III will be made available separately.

x) General Secretary,
ICES,
Charlotenlund Slot,
2920 Charlottenlund,
DENMARK

1. Participants

| | |
|---|---|
| Mr F. Billström | Sweden |
| Mr A.C. Burd | U.K.(England) |
| Mr J. Møller Christensen | Denmark |
| Mr O.A. Davidsen | Norway |
| Mr D. de G. Griffith | ICES |
| Mr B.W. Jones | U.K. (England) |
| Mr H. Lassen | Denmark |
| Mr K. Laumann | Denmark |
| Mrs E. Lund | Denmark |
| Mr J.A. Pope | U.K. (Scotland) |
| Mr K. Postuma | Netherlands |
| Mr Ø. Ulltang | Norway |
| Mr J.F. de Veen | Netherlands |
| Mr Cl. de Verdelhan | France |

2. Terms of Reference

At the 61st Statutory Meeting in Lisbon, October 1973, the Council passed the following Resolution (C.Res.1973/2:16):

"It was decided, that:

the Working Group on Eventual Establishment of an ICES ADP System for Fishery Statistics should meet before the mid-term Meeting of the Bureau in order to work out a detailed plan for a pilot study of System c), concerned with North Sea herring, including appropriate cost estimates".

(Note: for details of System c), see Doc. C.M.1972/D:7).

3. Material for Trial Run

Discussion of the establishment of an ICES ADP system for fisheries statistics at the 1973 Council Meeting concluded with the proposal of a trial run using the North Sea herring data (C.Res.1973/2:16), the aim being to study the feasibility and cost of the full system.

At its Meeting in February 1974, the Herring Assessment Working Group considered the output which the trial run should be designed to achieve, and the nature of the input data required for this. On the basis of an output of monthly catch in numbers per age group by statistical rectangles, for each gear type, the following statistical and biological information was requested; also shown are the dates which, it was felt, were both feasible and necessary for the submission of the data to ICES by the countries involved in the North Sea herring fishery:

(i) Total catch of herring in metric tons, per month, per rectangle. 1 April 1974.

(ii) Length distribution of the samples, and numbers per kg stating the source (sample or catch). The statistical rectangles to which the data relate should also be stated. 13 May 1974.

(iii) Weight-length data. 13 May 1974.

(iv) Age-length data. 13 May 1974.

Items (i) to (iv) were requested for each of the five years 1969-1973. Countries which were not able to give a breakdown by statistical rectangle or by month were asked to supply data with the finest possible area and time breakdown.

Not all countries who were in a position to supply data did so. The material which was received is summarised in Appendix I.

On examination of the available data, it was decided that the Trial Run should be based on 1972 material only, and (because of shortcomings in the biological data) that it should be limited to a breakdown by statistical divisions (splitting IVa into east and west), rather than being broken down by statistical rectangles. It should also be pointed out that the Statistical News Letter age composition data had already been processed to a certain extent, and thus slightly less work was involved in the preparation of the material for the trial run than would be the case in the operation of a full system.

## 4. Details of System c)

### 4.1. General requirements

The Working Group considered how the data should be handled in the computer. A general principle was agreed that the national data as submitted should be transferred to a computer file for permanent storage in an unprocessed form. These files could serve as the data source for ICES statistical publications. Further files could be set up which could call for specified data to be copied from the basic file.

On the secondary files the data might be processed and stored in the processed form. Such secondary files would include those used by Assessment Working Groups. Working Groups might want to specify data to be copied to a secondary file and have printouts of the data. Processing might then proceed by a series of steps, each step involving displaying the data, data vetting, and processing to the next stage. The members of the Working Group would be responsible for all vetting decisions and could specify each successive step in the processing procedure. Such a procedure was envisaged for the trial run.

### 4.2. Requirements of computer language

The Group spent a considerable time in defining the various computing facilities which System c) should provide for assessment analyses in general and the Herring Assessment Working Group in particular. The following computing facilities were identified as being essential for the first stage in setting up a system:

(a) data file display
(b) data manipulation
(c) data grouping
(d) data interaction
(e) data presentation

(a) Data file display: a number of distinct data files are required. The main files are (i) those containing catch and effort statistics and (ii) those containing biological information. Each file will contain records, each record being of a standard format. Data file display is a facility for extracting from each record in a specified file the total information in

the record or any specified sub-set. The sub-set to be displayed must be specified by the reset at-run-time.

(b) Data manipulation: any specified item of data taken from a file record must be capable of being changed either by ($\alpha$) multiplication by a constant or by ($\beta$) having some quantity added to or substracted from it. For example, a quantity Q may be manipulated into a quantity $Q^1$ where $Q^1 = kQ$ or $Q^1 = Q + k^1q$. The variables k, $k^1$ and q are to be specified at-run-time.

(c) Data grouping: the system must allow the derivation of quantities Q which are linear combinations of either original file items or manipulated file items, i.e. $Q = k_1 Q_1 + k_2 Q_2 + .... + k_o Q_o$ where $k_1$, $k_2$, ...., $k_p$ and (if necessary) $Q_1$, $Q_2$, ...., $Q_p$ are specified at-run-time.

(d) Data interaction: if $A_1$ and $A_2$ are two specified arrays then it must be possible to construct an array $A_3 = A_1 \oplus A_2$ where the symbol $\oplus$ represents a defined method of operation of the elements of $A_1$ on those of $A_2$.

(e) Data presentation: the system must be capable of outputting ($\alpha$) details of any data manipulation process which has taken place and ($\beta$) two-way tables with specified rows and columns.

The full System c) must include facilities for other types of data processing on the data held on a working file. For example, such processing might include virtual population analyses. These future processing procedures would require the writing of additional program blocks which, when required, could be called into the system. The Working Group did not specify any of these processing programs at this stage. It did note, however, that in order to provide such facilities it would be necessary for ICES to employ someone trained in computer programming, who could look after the system and up-date both the data banks and the software as required.

## 4.3. Application of system to 1972 herring data

Because not all the biological data had been submitted as requested on a rectangle/month basis the processing procedure had to be a somewhat truncated version of the original plan in that numbers of fish would be converted to numbers at age using age distributions rather than being transformed to length distributions to which age-length keys would be applied.

Data were prepared for punching onto cards by the Working Group in the format given below:

Data formats for punch cards used for trial run on North Sea herring

Card Type 0 — Catch Data

| Columns | Data |
|---|---|
| 1 - 3 | Nationality |
| 4 - 7 | Year/Month |
| 8 | Blank |
| 9 - 13 | Port of landing |
| 14 | Utilization (Human consumption/industrial) |
| 15 - 16 | Gear |
| 17 | Blank |
| 18 - 20 | Division |
| 21 - 23 | Rectangle |
| 24 - 25 | Species area (rectangle grouping) |
| 26 - 32 | Catch (metric tons, round fresh weight) |
| 33 | Control |

For the purpose of the trial run no indication of species was included on the card as only one species was involved. Normally, columns would be allocated to species identification.

Card Type 1

| Column | |
|---|---|
| 1 - 3 | Nationality |
| 4 | Blank |
| 5 - 7 | Sample serial number |
| 8 | Control |
| 9 - 12 | Year/Month |
| 13 | Utilization |
| 14 - 15 | Gear |
| 16 | Blank |
| 17 - 19 | Division |
| 20 - 22 | Rectangle |
| 23 - 24 | Species area |
| 25 | Source of sample (research/commercial) |
| 26 - 29 | Number of fish measured |
| 30 - 32 | Number of fish per 10 kg |
| 33 - 34 | Percentage of spring spawners |
| 35 - 38 | Number of fish in age group 0 |
| 39 - 42 | " " 1 |
| 43 - 46 | " " 2 |
| 47 - 50 | " " 3 |
| 51 - 54 | " " 4 |
| 55 - 58 | " " 5 |
| 59 - 61 | " " 6 |
| 62 - 64 | " " 7 |
| 65 - 67 | " " 8 |
| 68 - 70 | " " 8+ |

Programs for the trial run will be prepared by Mr H. Lassen and Mr K. Laumann of the Danish Institute who will also supervise the trial run. To assist the programmers in the trial run the Group prepared guidelines as to how the processing should proceed, and these are reproduced as Appendix II. It is expected, however, that difficulties may arise during processing due to inadequate data coverage or unanticipated snags in which case the proposed processing procedure may have to be modified. It is planned to complete the trial run before the 1974 Council Meeting and the results will be produced as a supplement to this report (Appendix III). It is recommended that those members of this Working Group who will be in Copenhagen for the Council Meeting should meet together with members of the Herring Assessment Working Group as early as possible in the week of the Council Meeting to make a preliminary evaluation of the results before they are presented to the Statistics Committee.

## 4.4. Data records for full system

Alternative data formats were proposed for the biological data for use when fuller data were available. These are as follows:

Data formats for punch cards proposed for biological data for future use when card Types 1 and 2 would replace card Type 1 used for the trial run.

Card Type 0 As for trial run with species identity.

Card Type 1A Length composition and length-weight data.

| Columns | Data |
|---|---|
| 1 - 3 | Nationality |
| 4 | Data identifier (1) |
| 5 - 7 | Sample serial number |
| 8 | Control |
| 9 - 12 | Year/month |
| 13 | Utilization |
| 14 - 15 | Gear |
| 16 - 18 | Division |
| 19 - 21 | Rectangle |
| 22 - 24 | Species |
| 25 - 26 | Species area |
| 27 | Source of sample (research/commercial) |
| 28 - 30 | Number of length groups in sample |
| 31 - 35 | Total number of fish in sample |
| 36 - 40 | Total weight (kg, round fresh weight) of sample |

Card Type 1B Length composition and length-weight data (continued)

| | |
|---|---|
| 1 - 3 )<br>4 )<br>5 - 7 )<br>8 ) | As for Card 1A |
| 9 - 11 | Smallest length group (1/2cm units) |
| 12 | Length increment (1/2cm units) |
| 13 - 16 | Number of fish in first length group (on the card) |
| 17 - 20 | " " second " " |
| 21 - 24 | " " third " " ------- etc. |

(Maximum of 72 columns. Additional 1B cards may be used if required to accommodate additional).

Card Type 2A Length-age data

| | |
|---|---|
| 1 - 3 | Nation |
| 4 | Data identifier (2) |
| 5 - 7 | Sample serial number |
| 8 | Control |
| 9 - 12 | Year/month |
| 13 | Utilization |
| 14 - 15 | Gear |
| 16 - 18 | Division |
| 19 - 21 | Rectangle |
| 22 - 24 | Species |
| 25 - 26 | Species area |
| 27 | Source of sample (research/commercial) |
| 28 - 30 | Total number of length-groups |
| 31 - 34 | Total number of fish in sample |

Card Type 2B Length-age data (continued)

| Columns | Data |
|---|---|
| 1 - 8 | As for Card 2A |
| 9 - 11 | Smallest length-group (on the card) |
| 12 - 13 | Length increment |
| 14 - 17 | Total number of fish in first length-group |
| 18 - 20 | Number of fish in age-group 0 |
| 21 - 23 | " " " 1 |
| 24 - 26 | " " " 2 etc. |

(Maximum of 72 columns. Additional 2B cards may be used to accommodate additional age-groups and further length-groups).

## 5. Data Reporting for a Full ADP System

### 5.1. Review of present reporting

The Working Group stressed that a major requirement for the introduction of an ADP System for handling the various statistical materials submitted to ICES was the standardization of the quality and format of submissions from statistical offices of member countries.

The Working Group reviewed the present status of data-reporting by countries and also the publication and use of statistical information. A simplified diagrammatical representation of the complete system is given in Figure 1. The figure is a simplified one since no distinction is made between advice or information on the one hand and instruction on the other, nor can all the activities of the organisations referred to be taken into account. Nevertheless, it is felt that this diagram conveys a considerable amount of information in an acceptably concise form.

Bulletin Statistique contains data supplied by the fisheries statistics reporting agencies of the member countries, but information received from national fisheries laboratories has been published on a few occasions under exceptional circumstances. In these cases, the source of this information is always stated in the Bulletin.

National fisheries laboratories provide the data for three of the four Statistical News Letters published each year (Herring and Mackerel Nominal Catch and Fishing Effort, Herring and Mackerel Stock Record Data, Demersal Species Nominal Catch and Fishing Effort and Stock Record Data). The fourth News Letter, Nominal Catch and Fishing Effort by Months as Reported on STATLANT Forms, contains information provided by the reporting agencies of a number of countries.

The archival material, which is not published, consists of biological data (length parameters, weight parameters, age/length keys etc.) submitted by national fisheries laboratories on a routine basis. Material brought to ICES Working Groups by participants is also retained from time to time.

From 1974 (1973 data), national statistics offices have been providing some data for the use of ICES Working Groups in the form of preliminary annual catch figures for fourteen listed species.

Considerable discrepancies regularly appear, however, between some catch figures supplied by statistics reporting agencies and those provided by fisheries laboratories for the same species, area, or period. In some countries the degree of communication and cooperation between statistics office and fisheries

laboratory is very high, but in other countries it appears to be very poor.

Where the source of any discrepancy can be identified with reasonable certainty, it usually falls into one of three groups - incorrect species identification, incorrect area allocation, or the grouping of the catch by biological units rather than by statistical areas. Most of the discrepancies between the catch figures reported to Bulletin Statistique, and those used by ICES Working Groups, are ascribed to the last cause. Two other aspects should also be mentioned, however. It sometimes happens that for some countries the catch statistics compiled by biological laboratories simply do not agree with those submitted for publication in Bulletin Statistique by the national reporting agency, and that these differences cannot be reconciled by any of the three reasons mentioned above. It should also be borne in mind that apparent changes in catch from one year to the next may not always represent real changes in the quantity or distribution of the catches themselves, but may be partly or entirely the result of changes - usually improvements - in the national reporting system.

The fish species listed individually in Bulletin Statistique are named as in FAO Fisheries Circular No.441 (October 1972) which is based on the International Standard Statistical Classification of Aquatic Animals and Plants (ISSCAAP), and they are arranged in the sequence followed in that Circular. The "Various" groups in Table 4 of Bulletin Statistique (Various Salmonoids, Various Clupeoids, Various Demersal Percomorphs etc.) collect those species which are of relatively little economic importance in the ICES area as a whole, although some species are locally important. A new Table in the Introductory Section of Bulletin Statistique (commencing with Volume 57 for 1972) will give details of these categories by species.

Apart from the assignation of a source or sources for various discrepancies as mentioned above (and which usually involves a certain amount of speculation), some countries' reporting systems are unable to identify some areas to the division or sub-division level, nor some catches to the species level. These shortcomings are always specified when the catches are reported to Bulletin Statistique.

The Working Group draws the attention of member countries to these problems, and in particular would like to stress the necessity of close cooperation between national statistics reporting agencies and national fisheries laboratories. Sampling of the catch for species content needs to be improved in many areas, and although the Working Group was pleased to hear of changes in statistics collection procedures aimed at improving the area allocation of the catches, it should be pointed out that there are still some shortcomings in this regard.

5.2. Future treatment of statistical material

The Working Group still recommended that the Bulletin Statistique should be produced by direct offset reproduction of computer tabulations, but recognised that it will be necessary to redesign the STATLANT Forms in such a way that the data on them can be handled directly by a punch card operator. The advantages of national reporting offices supplying their data on magnetic tape should be considered.

Attention was also drawn to the enormous amount of labour involved in preparing the Statistical News Letter containing Nominal Catch and Fishing Effort by Months as Reported on STATLANT Forms. This STATLANT 27B material is extremely bulky and requires a great deal of preliminary collation and typing before the News Letter can be produced. The Working Group felt that the data it contained were extremely valuable, however, and should continue to be

produced as a News Letter - or possibly as part of the Bulletin Statistique rather than as a separate publication.

It was recommended that the necessity of revising the STATLANT Forms, both 27A and 27B, should be brought to the attention of the CWP at their forthcoming Paris Meeting in September 1974.

5.3. Statistical Codes The Working Group considered available codes for the classification of fishing units, fishing gear, fish species and fishing areas.

5.3.1. Fishing units

Two systems (International Standard Statistical Classification of Fishing Vessels) based on tonnage (GRT) are described in FAO Fisheries Circular No.429; tonnage Divisions and tonnage Groups. The units of the Group System were considered to be unnecessarily small, and the Working Group recommended that the Division system be used for reporting all effort data to ICES. The Working Group does not mean to imply that GRT is necessarily the best way or the only way in which fishing effort should be assessed; it has the merit, however, of being widely used and relatively easy to collect. The tonnage divisions (which are broadly equivalent to the groupings used by ICNAF), are listed below.

International Standard Statistical Classification of Fishing Vessels (ISSCFV)

| | "Division" | |
|---|---|---|
| Division Code | Lower Limit GRT | Upper Limit 1) GRT |
| 0 | 0 | 0.9 |
| 1 | 1 | 24.9 |
| 2 | 25 | 49.9 |
| 3 | 50 | 99.9 |
| 4 | 100 | 149.9 |
| 5 | 150 | 499.9 |
| 6 | 500 | 999.9 |
| 7 | 1 000 | 1 999.9 |
| 8 | 2 000 | 9 999.9 |
| 9 | 10 000 | 99 999.9 |

1) ".9" is understood to be recurring.

5.3.2. Fishing gear

The fishing gear classification given in the current "Notes for Completion of STATLANT Forms" (Doc. C.M.1973/D:10) was first put forward, essentially, in a document presented to the Statistics Committee by the then Statistician in 1972 (Doc. C.M.1972/D:13). The Working Group saw no reason to suggest any amendments.

5.3.3. Fish species

The Working Group agreed that national codes, on the one hand, would not be sufficiently extensive for general ICES statistical purposes, but that an ICES code, on the other hand, would be unnecessarily cumbersome for use by national offices. Recognizing the merits of the 10-digit taxonomic ISSCAAP code (International Standard Statistical Classification of Aquatic Animals and Plants), the Working Group requested the Statistician to prepare an account of this and other possible codes to be considered at the next Statutory Meeting, with a view to obtaining a recommendation from the Council on this matter.

5.3.4. Fishing area

The Working Group considered proposals by the Statistician, which were based on earlier codes (C.M.1971/D:12) with some amendments. The Meeting could not reach agreement, however, on coding systems for the statistical sub-areas, divisions and sub-divisions, and for the statistical rectangles. The Statistician was requested to draw up possible numeric and alphanumeric codes for these area systems and present them to the next Statutory Meeting with a view to obtaining a recommendation from the Council.

6. Data Security

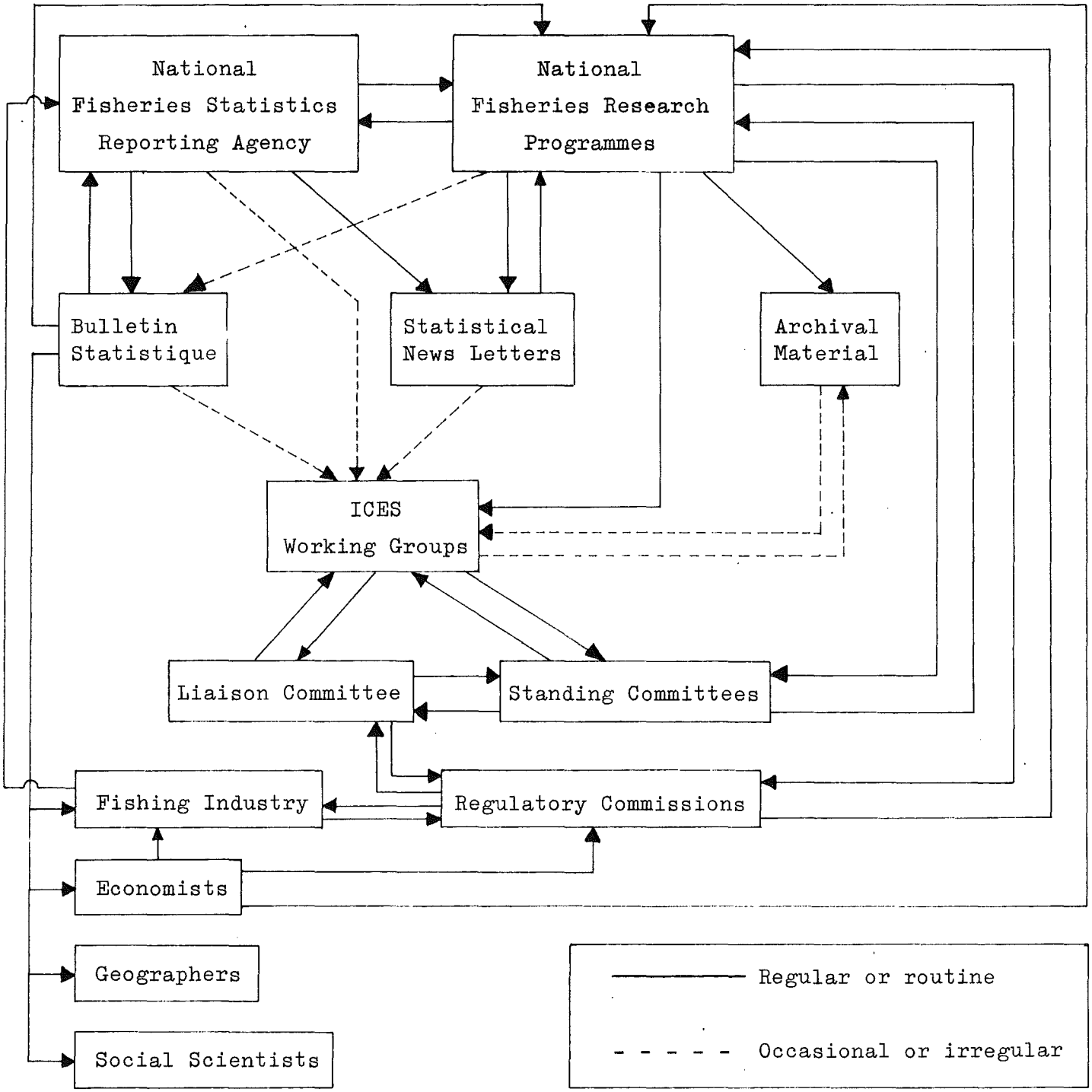
Regarding "internal security" of biological data, it was agreed that requests to access the data should go to the ICES Statistician from the head of the relevant (e.g. pelagic or demersal) section head in a national fisheries laboratory. Any output produced would be sent directly to the section head from the Statistician. A third party who wished to use material reported to ICES by a different laboratory would make the request to the section head in that laboratory and not to ICES. Partially processed data on Working Group files should be accessed only on the authority of the General Secretary (similar to the procedure covering the citation of unpublished Working Group Reports).

The Working Group also considered the problem of "external security" with regard to catch and fishing effort data (Bulletin Statistique material) and biological data. It was noted that NEUCC is a University computing centre and that no special security measures are in operation there. Despite this, the Working Group was of the opinion that the risk of data files being copies or corrupted from outside was not great. If the Council considers that a greater degree of security is desirable, however, this can be obtained elsewhere but at a greater cost.

7. Costs

The labour cost of the trial run in man-hours, broken down by activities, is given in the account of the trial run which may be found in Appendix III.

The annual cost of a full ADP System was calculated in the 1972 Report of the Working Group (C.M.1972/D:7) as being 17,000 D.Kr. for rental of punching equipment, 4,000 D.Kr. for materials and 30,000 D.Kr. for computer time. The salary of the necessary extra Secretariat staff must be added to this. The costs are difficult to assess precisely. Once the system has been set up the financial outlay depends on the volume of material coming in and on the way in which it has been compiled. The Working Group considered that it would be reasonable to ask Member Countries to bear the cost of producing their input data in computer-readable form (e.g. magnetic tape or punched cards); countries which lacked the necessary facilities should be asked to pay the cost of transferring the data from STATLANT Forms, etc. at ICES.




Simplified flow chart showing the position of ICES' statistics publications and archival statistics material in relation to some of the activities of the Council and its member countries

APPENDIX I

## Herring Material Received for Trial Run of ADP System

1. Total catch per month per rectangle, 1969 - 1973

Percentage of each country's total (Bull. Stat., Table 4) annual North Sea herring catch available by month and rectangle (Column A) and by month and division (Column B).

| | 1969 | | 1970 | | 1971 | | 1972 | |
|---|---|---|---|---|---|---|---|---|
| | A | B | A | B | A | B | A | B |
| Belgium | 93 | 100 | 107 | 100 | 95 | 100 | 100 | 100 |
| Denmark | 39 | 100 | 50 | 100 | 57 | 100 | 44 | 100 |
| Faroe Is. | - | 100 | - | 75 | - | 77 | - | 100 |
| Finland | - | - | - | - | - | - | - | - |
| France | - | 93 | - | 95 | - | - | - | - |
| Germany F.R. | 8 | 100 | 1 | 100 | 19 | 100 | 4 | 100 |
| Iceland | - | 100 | - | 100 | - | 100 | - | ... |
| Netherlands | 97 | 100 | 95 | 100 | 92 | 100 | 97 | 100 |
| Norway | 97 | 94 | 96 | 88 | 98 | 95 | 99 | 98 |
| Poland | 100 | 100 | 92 | 100 | 100 | 100 | 100 | 100 |
| Sweden | - | 21 | - | 25 | - | 39 | - | 12 |
| England | 98 | 100 | 98 | 100 | 99 | 100 | 68 | 89 |
| Scotland | 80 | 100 | 75 | 100 | 89 | 100 | 67 | 100 |
| USSR | - | 100 | - | 100 | - | 100 | - | 100 |
| Total | 36 | 82 | 47 | 81 | 49 | 85 | 44 | 81 |

Catches of Herring in the North Sea (Sub-area IV and Divisions VIId, e),

1969 - 1972

| | Total Annual Catch by Month and Rectangle (N/L, and ADP WG 1974) | Total Annual Catch by Month and Division (Bull.Stat., Table 10) | Total Annual Catch by Division (Bull.Stat., Table 4) |
|---|---|---|---|
| 1969 | | | |
| Belgium | 434 | 468 | 468 |
| Denmark | 79 786 | 202 909 | 202 909 |
| Faroe Is. | ... | 40 640 | 40 640 |
| France | ... | 17 596 | 18 852 |
| Germany F.R. | 3 834 | 46 082 | 46 082 |
| Iceland | ... | 19 997 | 19 997 |
| Netherlands | 28 845 | 29 769 | 29 769 |
| Norway | 118 331 | 114 355 | 122 293 |
| Poland | 9 201 | 9 221 | 9 221 |
| Sweden | ... | 33 109 | 155 603 |
| England | 6 565 | 6 666 | 6 666 |
| Scotland | 17 267*) | 21 644 | 21 644 |
| USSR | ... | 61 549 | 61 549 |
| Total | 264 263 | 604 005 | 735 693 |
| 1970 | | | |
| Belgium | 836 | 780 | 780 |
| Denmark | 83 636 | 167 718 | 167 718 |
| Faroe Is. | ... | 55 132 | 73 507 |
| France | ... | 13 325 | 13 966 |
| Germany F.R. | 389 | 38 307 | 38 307 |
| Iceland | ... | 22 901 | 22 901 |
| Netherlands | 46 961 | 49 416 | 49 416 |
| Norway | 193 026 | 177 341 | 200 442 |
| Poland | 4 982 | 5 389 | 5 389 |
| Sweden | ... | 34 670 | 140 781 |
| England | 9 531 | 9 702 | 9 702 |
| Scotland | 17 010 | 22 768 | 22 768 |
| USSR | ... | 18 078 | 18 078 |
| Total | 356 371 | 615 527 | 763 755 |

*) Landings <50% herring omitted

/Cont'd ...

Continued

| | Total Annual Catch by Month and Rectangle (N/L, and ADP WG 1974) | Total Annual Catch by Month and Division (Bull.Stat., Table 10) | Total Annual Catch by Division (Bull.Stat., Table 4) |
|---|---|---|---|
| 1971 | | | |
| Belgium | 645 | 681 | 681 |
| Denmark | 130 990 | 231 155 | 231 155 |
| Faroe Is. | ... | 49 876 | 64 796 |
| France | ... | ... | 20 755 |
| Germany F.R. | 750 | 3 952 | 3 952 |
| Iceland | ... | 36 992 | 36 992 |
| Netherlands | 32 073 | 34 946 | 34 947 |
| Norway | 125 784 | 122 569 | 128 584 |
| Poland | 2 032 | 2 031 | 2 031 |
| Sweden | ... | 36 880 | 95 552 |
| England | 4 365 | 4 426 | 4 426 |
| Scotland | 23 605 | 26 474 | 26 474 |
| USSR | ... | 9 741 | 9 741 |
| Total | 320 271 | 559 723 | 660 086 |
| 1972 | | | |
| Belgium | 1 336 | 1 338 | 1 338 |
| Denmark | 111 828 | 252 458 | 252 458 |
| Faroe Is. | ... | 48 444 | 48 444 |
| Finland | ... | ... | 690 |
| France | ... | ... | 14 334 |
| Germany F.R. | 203 | 5 644 | 5 644 |
| Iceland | ... | ... | 31 998 |
| Netherlands | 25 047 | 25 863 | 25 863 |
| Norway | 117 567 | 117 501 | 119 341 |
| Poland | 2 233 | 2 236 | 2 236 |
| Sweden | ... | 10 186 | 82 130 |
| England | 448 | 583 | 657 |
| Scotland | 16 239 | 24 249 | 24 249 |
| USSR | ... | 16 461 | 16 461 |
| Total | 274 901 | 504 963 | 625 843 |

2. Length distribution of samples and nos. per kg, by rectangles, 1969 - 1973.

| | |
|---|---|
| Federal Republic of Germany: | Available from Statistical News Letters (by fishing area), 1969 - 1971. |
| Netherlands: | Available from Statistical News Letters (by "herring" areas - System 27.3.01.00), 1969 - 1971. |
| Norway: | Length distribution data submitted for IVa east, IVa west, IVb; 1971 - 1973. No data on numbers per kilo. |
| Poland: | Available from Statistical News Letters, by fishing area, 1969 - 1971. |
| U.K. (England): | Data submitted as requested; also specified by gear (although this was not requested). |
| U.K. (Scotland): | Data submitted by groups of rectangles, which for 1972 and 1973 correspond to the "herring" areas of System 27.3.01.00; otherwise as requested. |

No data are available from the following countries:

Belgium, Denmark, Faroe Is., France, Iceland, Sweden and USSR.

3. Weight - length data

Information on Biological Data Form 4 (mean weight per age group, variance of mean, and number of specimens, spring/autumn spawners) is available by "herring" areas (System 27.3.01.00) for 1972 for the following countries:

F.R. Germany, Netherlands, Norway*), Poland, U.K. (England)*), U.K. (Scotland).

*) Available for 1973 also.

4. Age - length data

a) Age-length keys are available as follows:

| | |
|---|---|
| Netherlands: | Statistical News Letters, 1969 - 1971. |
| Norway: | By months and areas, 1969 - 1973. |
| Poland: | Raised length distribution by year class, Statistical News Letters, 1969 - 1971. |
| U.K. (England): | Statistical News Letters, 1969 - 1971. |
| U.K. (Scotland): | Statistical News Letters, 1969 - 1971. |

b) Information on Biological Data Form 2 (age distribution of samples, in numbers) by "herring" areas (System 27.3.01.00) for 1972 has been published in Statistical News Letters No. 60, for the following countries:

F.R. Germany, Netherlands, Norway, Poland, U.K. (England), U.K. (Scotland).

c) Information on Biological Data Form 3 (mean length per age group, variance of mean, and number of specimens, spring/autumn spawners) is available by "herring" areas (System 27.3.01.00) for the following countries:

F.R. Germany, Netherlands, Norway*), Poland, U.K. (England)*), U.K. (Scotland).

*) Available for 1973 also.

APPENDIX II

## Guidelines for Processing the Trial Run on 1972 Herring Data

All data to be worked up:

1) by months
2) split by gear
3) trawl catches split by C (commercial landings)
   I (industrial landings).

1) Summate catch from rectangle data within each herring area. Display.

2) Is area 12 catch = Division IVc & VIId-e? Display.

3) Summate areas 02 + 03. Is sum same as total recorded IVa W? Display.

4) Is area 04 catch same as total recorded IVa E? Display.

5) Is total recorded IVa W + IVa E equal Division IVa? If not, split Division IVa catch by proportion IVa W/IVa E. Display.

6) Summate areas 08 + 09? Is sum same as Division IVb? Display.

7) Is sum all months, gears for Divisions IVc, IVb, IVa W, IVa E equal to total reported in Bull. Stat. North Sea catch?

   Display country differences.

8) Is country with unallocated catch using TR (Trawl)
   PS (Purse Seine)
   DR (Drift Net)
   Unspecified gear?

   If unspecified, SHOUT HELP.

   If PS, split unallocated catch between areas on basis of purse seine monthly catch.

   If TR is catch C or I? If C, split by TR C catch as above.

   If I, split by TR I catch as above. If DR, split by DR catch as above.

   Display total catch by month
   area
   division for

   PS
   TR C
   TR I and
   DR

9) Conversion to catch in number. Input Divisional (IVa W, IVa E not combined) totals by month

   gear: PS
   TR → C
   TR → I
   DR

10) Is there a No./kilo available for that gear? Display.
    If none available, is there one in neighbouring month?

11) Is No./kilo obtained from R or C?
    Reject R.
    If more than 1 valid No./kilo, take mean.

12) Apply 11 to divisional catch.

13) Reduce 12 by % spring spawners following procedure 10 and 11.

14) Apply age distributions to 13 following procedure 10 and 11.

15) Display monthly catch by age by gear within each division.
In case of TR show C and I separately and
Annual totals.

16) Display monthly catch within division all gears and
Annual totals.

17) Are you satisfied?

18) Good bye and Good Luck!