INTERNATIONAL COMMISSION FOR THE NORTHWEST ATLANTIC FISHERIES

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Review of ICNAF's Statistical Matters to 28 May, 1956

by R.S.Keir

The progress made by the member countries of the Commission in collecting and compiling statistical data on their fisheries in the Northwest Atlantic has brought us to the position where the statistical coverage of these fisheries is probably more detailed than that of any other comparable fishery.

We should now reconsider certain aspects of these statistics in the light of our present experience and with the recommendations made at previous meetings of ICNAF, especially the meeting of the Standing Committee on Research & Statistics at Biarritz, March 1956.

The following topics will be commented upon:

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1. Commission's Statistics: Accuracy, Comparability and Relevance to the Problems on Hand.

(a) The accuracy of the statistics on landings is not known. Much of the detail in which the Commission's statistics are now recorded depends on estimates of catches made by officers on fishing vessels. These are usually quite accurate but it would be of interest to have a specific measure of their accuracy based on the difference between their total estimate and the amount landed. (The question of estimates is further discussed in the section on size categories, page 4.).

(b) Poulsen (Document No.3, Serial No.362, 1956) has considered the yields per unit of effort of the different fleets for Subareas 1 to 5 and concluded that they were, on the whole, comparable and that they varied in a corresponding manner. The question was also discussed by the working parties at the meeting of the Standing Committee on Research & Statistics at Biarritz (March 1956). Work on the comparability of the yields per unit of effort is continuing and is further discussed under item 6, page 7.

(c) The statistics of the commercial fishing fleets are essential to the proper understanding of the fisheries and of the fish populations under exploitation. The present statistical submissions are minimal and in certain cases should be augmented (see paragraphs (d) and (e) below).

(d) Species Composition: In some cases the landings of cod only are reported. Other species are either not recorded or (e.g. haddock, pollock, etc.) are apparently included in the cod catch which is landed salted.

(e) Fish Discarded at Sea: Part of the Commission's minimum requirements were that data should not be limited to landings but should include data on fish discarded at sea.

Member countries generally have not yet reported catches discarded at sea. It is very important that they now do so. This is by far the major omission in our collection of statistics and a serious effort should be made to remedy the situation. The weight of each species discarded should be recorded. This data should be given by subdivision and month of capture as well as by kind of gear.

Data of this kind may be relatively difficult to collect accurately and should be supplemented by measurements and observations made at sea by trained observers.

2. Catches and Efforts of Individual Vessels.

When the catch and effort data are reported by individual vessels as is the case with France and Spain, the variation between the catches per unit of effort of the individual vessels permits an assessment of the reliability of the mean value of the catch per unit of effort of the fleet as a whole. It is suggested that where this data is available it should be reported (at least for one year) to the Commission.

3. Study of Past Data.

The records of the fishery in the Convention Area before, say, 1951 are of course not so detailed as the records kept

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since the Commission initiated the collection of the statistical data of this fishery on an international basis.

In particular, records of fishing efforts and landings made before or during the war, i.e. especially between, say, 1930 and 1950, would be of the greatest value, and member countries are urged to submit such data to the Commission.

Owing to doubt as to what conversion factors to use, and in case additional past data would become available, the Commission decided that no revision of the earlier data should be made before June 1956. It is proposed, however, that such a revision should be made in the coming year, preferably using a punched card method to facilitate the computing and tabulating required.

4. Conversion Factors:

A. Conversion Factors to Round Fresh Weight - Discussions of these fall into two groups, those concerned with salt fish and those concerned with fresh fish.

(i) Salt Fish: The Commission recommended the use of 2.7 for N. American landings and 3.0 for European landings for salt cod at the 1955 Annual Meeting. These conversion factors were also used for salt haddock. Recent conversion factor experiments by Ruivo (Document No.18, Serial No.377, ICNAF Ann. Meeting 1956) have confirmed the use of 3.0 as a conversion factor for salt cod. His experiments did not indicate definitely that different conversion factors should be used for different subareas or sizes of fish.

Conversion factors for salt pollock (2.6), and salt hake (3.9), were based on Spanish conversion factor experiments (Document No.7, Serial No.177, ICNAF Ann. Meeting 1954).

(ii) Fresh Fish: Anomalies exist in the conversion factors for fresh fish such as the use of 1.22 for fresh gutted haddock landed in the Maritimes and Quebec, 1.14 for Newfoundland, 1.17 for the United States and 1.20 for St.Pierre et Miquelon, Iceland and Germany (1.5 was used previously). Canada has recommended the use of 1.2 for cod and haddock gutted head on to round fresh weight. The conversion factors for halibut also vary considerably.

The Commission has normally termed its statistics on landings to be in the form round fresh weight (as coming from the sea). As the conversion factors used are generally average values based on samples taken from several areas and months, such effects as size of gonad, liver, condition, stomach contents, etc. are not considered individually. It might be better to term ICNAF's statistics the nominal round fresh catch (1.2 (approx.) times the gutted weight or 3.0 (or 2.7) times the weight of fish when salted and landed) and not the actual round fresh catch. This fact could then be considered in calculations where the weight of a relatively small sample of fish taken in one area at one time is related to the total weight landed commercially, and any proper adjustment made.

B. From Landed Length to Round Fresh Length - Some data has already been presented on this subject and has been examined by Poulsen (Document No.12, Serial No.371, ICNAF Ann. Meeting 1956). More data will be required if shore sampling of salt fish is initiated (see Report of Working Party 6 by Dr.W.R.Martin, ICNAF Committee on Res. & Stat., Biarritz, 1956). Shore sampling of landings, when the locality and month of capture is not known and

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when a conversion factor must be used to standardize the data, is no substitute for measurements taken at sea.

5. Market Size Categories (or Cullings):

(a) When catches or landings are culled and when the sizes of fish included in each size category are known, this data may provide a valuable addition to our knowledge. It may also be useful in planning sampling programmes as each category can be sampled separately and the various samples weighted according to the proportion of the fish in each category to obtain values for the whole catch. By this means greater accuracy in determining the length distribution etc. of the fish is obtained with the same number of fish measured.

(b) However, the collecting, adjusting and compiling of size categories by subdivision and month of capture for these vessels which fish in several subdivisions and for two or three months in one trip represents a considerable labour. It is questionable if the accuracy and usefulness of the resulting data justifies this labour. The table below shows the percentage of each size category landed by various fleets in Subareas 1 to 5. There is certainly a great variation between countries:

Cod Size Categories (1954) by Subarea, Country and Gear (in Percentages)

			-- % --			
			Large	Medium	Small	Uns.
Subarea 1	France	Otter Trawlers	4.2	35.1	60.7	-
	Spain	" "	6.1	17.7	76.2	-
	U.K.	" "	77.0	9.5	3.9	9.5
Subarea 2	France	" "	-	5.2	94.8	-
	Spain	" "	-	1.9	98.1	-
Subarea 3	France	" "	8.6	32.5	58.9	-
	Spain	" "	6.1	11.0	82.9	-
	U.K.	" "	28.8	0.5	14.1	56.5
	Spain	Pair Trawlers	15.5	22.3	62.2	-
	U.S.	Otter Trawlers	17.1	71.4	11.4	-
Subarea 4	France	Otter Trawlers	7.6	31.9	60.5	-
	Spain	" "	6.5	7.7	85.8	-
	Spain	Pair Trawlers	33.3	50.0	16.7	-
	U.S.	Otter Trawlers	48.2	47.9	3.9	-
Subarea 5	U.S.	Otter Trawlers	34.1	54.4	11.4	-
	U.S.	Long Liners	53.9	43.2	2.9	-
	U.S.	Hand Liners	37.0	61.8	1.2	-
	U.S.	Sink Gill	57.7	42.3	+	-

Such data are no substitute for sampling at sea. Nor are categories estimated at sea of much value to the economist who is more concerned with the cull by which the fish are sold. Generally this latter cull is made on the dried fish.

(c) The data which are now collected are relatively valueless. However it is suggested that the collection of data on size categories as estimated by the captains of the fishing vessels be continued until a sampling procedure has been introduced and that the value of the size categories should be investigated by comparing them with:

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(1) Records of measurements made at sea;
(2) Records of the most accurate cullings used in the actual marketing of the fish.

Referring to (1): These measurements could be made by trained observers or, in order to extend the sampling as widely as possible, by a junior officer or member of the crew.

They should be recorded on a standard form prepared and designed by ICNAF. These original records, or copies of them, should then be sent to the Secretariat to be published and made available to all scientists working in the Convention Area.

Referring to (2): These culls of the dried fish are usually made when the dried fish are being packed into bundles. Fish of doubtful category (i.e. near the borderline between categories) are often actually weighed to decide to which category they belong.

At the very minimum the meaning of the size categories should be defined by observation and measurement if the Commission decides to continue the practice of collecting and compiling them.

(d) Under certain circumstances the use of size categories can lead to major errors in the locating of catches from subdivisions or months.

Consider the case where the vessel is at sea for several months (2 or 3) and fishing in several subdivisions (even in different subareas). The captain's estimates for cod might read like this (for simplicity the landings for each month/subdivision are given as 20 tons).

		-- Tons --			
Month	Subdivision	Large	Medium	Small	Total
June	a	10	7	3	20
	b	12	4	4	20
	c	8	12	-	20
	d	14	4	2	20
Total		44	27	9	80
July	a	8	2	10	20
	b	2	2	16	20
	c	3	4	13	20
	d	10	8	2	20
		23	16	41	80
August	a	2	16	2	20
	b	6	11	3	20
	c	10	5	5	20
		18	32	10	60
Grand Total		85	75	60	220

But the captain's estimates of size categories or his total landings do not usually agree exactly with what he lands. While his total estimate is usually very close, the allocation by size categories may be quite different. Thus:-

Actually landed:

Large	Medium	Small	Total
25	70	120	215

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It should not be said that [illegible] difference is quite unusual.

One possible method of adjusting the captain's estimates is to multiply each category by a separate adjustment factor equal to:

$$\frac{\text{Wt. of size category landed}}{\text{Wt. of size category estimated}}$$

Thus the estimates of large cod would be multiplied by 25/85, the medium by 70/75 and the small by 120/60. Doing this we obtain the following table:

		Large	Medium	Small	Total
June	a	2.9	6.5	6.0	15.4
	b	3.5	3.7	8.0	15.2
	c	2.4	11.2	-	13.6
	d	4.1	3.7	4.0	11.8
Total		12.9	25.1	18.0	56.0
July	a	2.4	1.9	20.0	24.3
	b	0.6	1.9	32.0	34.5
	c	0.9	3.7	26.0	30.6
	d	2.9	7.5	4.0	14.4
Total		6.8	15.0	82.0	103.8
August	a	0.6	14.9	4.0	19.5
	b	1.8	10.3	6.0	18.1
	c	2.9	4.7	10.0	17.6
Total		5.3	29.9	20.0	55.2
Grand Total		25.0	70.0	120.0	215.0

Thus the grand total is now the weight landed but the totals for each month/subdivision range from 11.8 to 34.5 instead of all being the same. The totals for each month and each subdivision are also now in error.

Month	Captain's Estimate	Adjusted
June	80	56.0
July	80	103.8
August	60	55.2
Subdiv.		
a	60	59.2
b	60	67.8
c	60	61.8
d	40	26.2

While errors may cancel out as has tended to happen in the summaries by subdivisions (a, b and c), they may not always do so (d).

The other method of adjusting the captain's estimate is to multiply each figure by

$$\frac{\text{Total Wt. Landed}}{\text{Total Wt. Estimated}}$$

in this case by 215/220. This leaves the proportion of size categories and totals for each month/subdivision as they are estimated by the captain and is the best solution to the

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problem. The fact that a captain's measure of size categories varies considerably from that used on landing tends to invalidate their use but there is nothing to indicate that the captain's total estimate of catch from each month/subdivision is much in error. It would be a good thing if all countries followed the practice of adjusting the captain's estimates by this latter factor, i.e.

$$\frac{\text{Total weight landed}}{\text{Total weight estimated}}$$

6. Fishing Efforts:

A. Precise definitions of the terms used for fishing efforts are required.

Thus there may be confusion as to what exactly is meant by the term "days fished" and "hours fished". No definition will be given here to avoid confusion with the one adopted by the Commission. Also the definitions used now in the various member countries should be obtained so as to check whether any change is required. A definition of days fished often used does not permit the days fished to be broken down to hours, thus days fished could not be given as 60 days and 12 hours nor as 60.5 days. Some confusion may arise when part of a day is spent fishing in one subdivision and part in another.

B. Fishing Power: This is further discussed under paragraph C below - Standard Unit of Fishing Effort.

(i) Relative fishing power is comparatively easy to measure when the vessels are fishing under similar conditions. The major difficulty arises when one considers vessels and gears designed for different kinds of fishing. Each may be extremely efficient on its own grounds and almost completely inefficient on another's (e.g. purse seiners and otter trawlers). A direct comparison of the yield per unit of effort obtained by two distinct kinds of gear, fishing on the same ground, may therefore be valueless in estimating their relative fishing power. However, such a comparison may yield valuable information concerning the behaviour of the fish.

(ii) The Commission requires that every three years the member countries prepare a list of all vessels fishing in the Convention Area, giving gross tonnage, length, number in crew, kind of gear used, whether Loran, radar, wireless telephone, echo-sounders or other fish-detecting devices, are carried, etc. These data are required for all vessels taking part in the 1956 fishery. The data has already been received from France and Portugal. Data on size or characteristics of the gear used should also be included, e.g. length of footrope of otter trawls, size of mesh used, size of hook used, etc. All of these data will be published (in document form) when the collection of data is complete. Member countries are therefore urged to submit their lists of vessels at as early a date as possible.

(iii) In the annual statistics it is proposed that, as gross tonnage has been shown in certain cases at least (Gulland 1955) to be correlated with fishing power, the average gross tonnage should be given of the vessels fishing in each month/subdivision.

C. Standard Unit of Fishing Effort: Gulland, in a paper submitted to Working Party 3 of Standing Committee on Research & Statistics at Biarritz, 1956, commented thus:

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"Measurements of Fishing Effort:

There has been in recent years much refinement of effort measures, with the aim of getting values that are proportional to the fishing mortality caused in the stock. These have, however, probably less general economic significance than the earlier crude measures. Although accurate fishing intensity statistics will always be essential, the best values of fishing intensity to relate to mortality, when a stock is being fished by a number of different types of vessel and gear, is obtained from effort statistics of some homogeneous part of the whole fleet that covers a fairly large proportion of the fished area. These statistics can be used to convert the catches of the whole fleet to give values of total effective effort. Release from the need to find means of converting effort statistics for different parts of the fleet to standard units, should allow more attention to be paid to the problems of obtaining suitable measures of the real total effort having economic significance, and of securing the very wide sample coverage for species, sex, size and age composition of the catches."

There are several fleets which fish in more than one subarea. In the table opposite the subareas fished, the number of subdivisions, months and month/subdivisions fished are given for each type of vessel for each country.

In studying the question of obtaining one figure for the total fishing effort for each month/subdivision, several of the gears could each be considered as the standard and the total efforts calculated. The different methods would then be compared. Such calculations as this, if required for each year, would almost demand the use of punch cards for sorting and tabulating (see Item 9).

Great variation is found in the yields per unit of effort of different fleets even in the same month/subdivision. The analysis of this variability and the reasons behind it are being given close study but the amount of data involved, while not sufficient on occasions to explain all the variation found, is sufficiently large to make the work somewhat slow and tedious.

D. This general problem of the relationship between catch, fishing effort and stock density is being given considerable study in many countries and by ICES. In order to understand the phenomenon fully, many approaches need to be used, including among them the following complementary studies:

1. Analysis of compiled data such as that published in ICNAF's Statistical Bulletin;
2. Analysis of similar data available by individual vessels;
3. Detailed analysis of trip records where individual sets or hauls are recorded;
4. Comparative fishing experiments;
5. Experiments to show the effect of the length of the haul on the size and composition of the catch;
6. Observations re the 'saturation effect', most probable with hook and line fishing gear, but probably seen with the otter trawler, not so much in one drag but in one day (owing to the need to clean and split the fish);

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		No. of Fishg.	Subdiv. Fished	Months Fished	Month/Subdiv. Fished
Canada	Otter Trawlers	2,3,4	12	12	109
	Dory Vessels	3,4	9	12	50
	Long Liners	3,4	5	12	33
	Danish Seiners	3,4	3	12	17
	Miscellaneous (mostly hook & line & trap)	2,3,4	12	12	120
Denmark	Otter Trawlers	1	?	?	?
	Dory Vessels	1	?	?	?
	Long Liners	1	?	?	?
	Misc. (small inshore)	1	6	?	?
France	Otter Trawlers	1,2,3,4	16	11	66 [2]
	Miscellaneous (St.P&M)	3	? [1]	?	?
Germany	Otter Trawlers	1	?	5	?
Iceland	Otter Trawlers	1	?	6	?
Italy	Otter Trawlers	2,3,4 [3]	?	?	?
Norway	Otter Trawlers	1	3	6	10
	Long Liners	1	6	7	31
Portugal	Otter Trawlers	1,2,3,4	16	11	63
	Dory Vessels	1 3	8	7	25
Spain	Otter Trawlers	1,2,3,4	12	12	56
	Pair Trawlers	3,4			
U.K.	Otter Trawlers	1 3	4	11	13 [4]
U.S.	Otter Trawlers	3,4,5	8	12	86 [4]
	Long Liners	5	2	12	24
	Hand Liners	5	2	11	20
	Sink Gill Net Boats	5	1	12	12
	Total	1,2,3,4,5	23	12	735 [5]

? indicates that the information is not available

1) Probably only 3P
2) Only landings (not efforts) are reported by month/subdivision
3) Data not reported by subareas
4) Data not given by subdivision for Subarea 3; hence this figure should be larger
5) This total would be rather greater if all data was reported by months and subdivisions. It would probably be increased by at least 100

7. Experiments to show the effect of various baits, hook sizes, patterns of hooks on lines, mesh sizes, etc. on the size and composition of the catch, e.g. the increase in mesh sizes recommended by the Commission last year for Subareas 3 and 4, may result in an immediate increase in the catch per unit of effort owing to the increased efficiency of the larger mesh in catching large fish.

The conclusions arising from the integration of such experiments will give the fundamental information required for the analysis of long term and inter-area and inter-month catch/effort data.

All of the above experiments relate primarily to catch per unit of effort. Further analyses are then required to relate this work to the stock density, considering in sequence:

(1) The density of the fish on the ground and at the time fished.
(2) The average density of fish in the area generally at the time fished.
(3) The average density of the stock and the size of the standing crop.
(4) The relation of (3) to annual production.

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The study will then tie up with the resources survey being carried out by FAO.

7. Statistical Bulletin - Arrangement of Data and Choice of Summary Tables

(i) Table 1, Statistical Bulletin Vol.4, is the equivalent of Table 1 printed in the 1955 Bulletin (Vol.3). Only one question has arisen so far. It has been suggested (W.R.Martin) that the data from Newfoundland and the mainland of Canada be recorded separately. I have no views on this except:

(1) Considerations of space might then make it impossible to put the table on one page as I believe it ought to be;
(2) In general, the Newfoundland and the mainland fisheries take place in separate subdivisions and there is therefore less overlap than one might suppose;
(3) The data are given separately in the detailed tables.

(ii) Dr. Martin has also suggested - as have others from time to time (Dr. Poulsen) - that the detailed data, at present printed as Tables 8-20, should be printed according to subdivisions, i.e. that all the data from one subdivision should be printed together.

Any decision to do this should come, if possible, after a decision to use punched cards, for without them the additional sorting required for this type of presentation would certainly delay printing beyond the present time.

The advantages of having all the efforts and landings from each area in one table are fairly obvious. It should be noted that this is already done for the landings of the major species separately in Tables 2-6. From the point of view of comparing yields per unit of effort both methods of presentation have advantages.

(iii) Recommendations or suggestions for improving the layout and presentation of the statistics in the Bulletin are particulary requested.

8. Reporting of Statistics - Standard Form.

ICNAF's statistics are discussed in more detail in Document No.10, Serial No.369, ICNAF Ann. Meeting 1956, with relation to the need for the use of a punched card system for compiling and tabulating.

In general, the statistical submissions follow a pattern based on the prescribed form circulated from the Secretariat. Occasionally a somewhat different pattern is used, more suitable no doubt to the countries' statistics. The reason for not using a standard form is that the size of the form would be very large and more cumbersome than those now used by any country.

Some modifications in the forms used at present - and these modifications could be discussed with the individual statistical offices concerned - could remove certain inconveniences (they are no more) from the manner in which the data is submitted. These modified formats would then have all the advantages of a printed form without the great size of the latter.

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For the reporting of most other data, such as length frequencies, age analyses or tagging data, standard forms will help standardize the presentation of the data and should be used.

9. Use of Punched Card Methods for Sorting and Tabulating.

Document No.10, Serial No.369, ICNAF Ann. Meeting 1956, discusses this in more detail. The primary advantages of using such a system are that it would:

(1) permit the Statistical Bulletin to be published earlier, probably (in the case of Bulletin 5) as early as February, 1957. Any improvement on this date would depend on the date the statistical submissions were received;
(2) allow much more time to be spent on checking original data for errors or inconsistencies (scrutinizing);
(3) allow greater analysis of the statistics to be made in less time;
(4) make the calculation of and use of a standard unit of fishing effort by one or more comparative methods possible;
(5) facilitate the analysis of the additional detailed data (by vessels) available from some fleets;
(6) allow time to be set aside for analysis and study of other statistical or biological problems or problems of co-ordination which are also the proper function of the Secretariat.

It is worth noting that on the day after the tables of Statistical Bulletin Vol.4 for 1954 were sent to the printers and before Part I had been finally prepared or any proof-reading done, the first statistical submissions for the 1955 fishery were received in the office of the Secretariat.

Some margin punched cards were obtained recently to assist in some of the analyses. These are useful for sorting relatively small quantities of data. The real solution to the handling and tabulating of ICNAF's statistical data will be the use of full punched cards in association with sorting and tabulating machines (i.e. such as the IBM, Hollerith or Power-Samas types).

10. Inclusion of Additional Kinds of Data in ICNAF's Statistics:

The working parties of the Biarritz meeting of the Standing Committee on Research and Statistics have recommended that certain other data should be collected and compiled on an international basis. Poulsen, in his Survey on the Validity and Use of Yields per Unit of Fishing Effort (Document No.3, Serial No.362) and Age Distribution of Cod Catches in Subarea 1 (Document No.19, Serial No.378), has also recommended the collection of other data. It is apparent that with the very international scope of the fisheries in the Northwest Atlantic, and with the complexity of the fish stocks, no one country can carry out all the experiments required or collect all the data required. This is true of the collection of data on lengths of fish and on ages - both of market samples and of fish sampled at sea either from commercial vessels or research vessels. It is especially true of tagging experiments where the experimenter must rely on the fishermen of many countries to notify him of the recapture of his tagged fish. In such fields international research co-operation will bear greatest fruit.

A tentative list of additional data which it might be profitable to compile and to co-ordinate on an international basis might include:

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A. Characteristics of the Catch and Stocks

I. Data on length measurements - market samples and samples taken at sea.
II. Data on age determinations - market samples and samples taken at sea.
III. The sex ratio and proportion of mature and immature of the catch.
IV. Data on meristic counts and measurements made for purposes of separating stocks, including data on parasitization.

B. Characteristics of Fishing Gears

I. Sizes of gears, e.g. length of footrope of otter trawls.
II. Mesh measurement data.
III. Hook measurement data.
IV. Data on experiments to determine the 50% release points of various species of fish using various sizes of meshes or hooks made of different materials.
V. Other measurement data or qualitative information concerning the selectivity or fishing power of gears such as the types of data noted under Section 6D, page 8.

C. I. Data on weight/length relationship of fish from different areas (stocks).
II. Data on age/length relationship of fish from different areas (stocks).

D. I. Complete data on all tagging experiments.
II. Complete data on all tagging recaptures.

When data are reported to the Commission for its records or for publication as part of a document, the original tabular data should be given (as has been requested by the Secretariat on various occasions) in addition to frequency diagrams, drawings of sections or other summaries. The absence of such tabular data makes the international compiling of data and the redrawing of figures to fit the standard-sized pages used by the Commission for its documents unnecessarily difficult.

It is important that plans for recording, reporting, analyzing and publishing data should be made at the same time as plans are made for its collection.

11. General Conclusion:

While much of the statistical work of the Commission has now been organized and the basic requirements are now well met, there remains much work to be done in co-ordinating the fisheries investigation carried out within this area and in expanding sampling programmes. In particular this is true concerning the collecting, compiling and publishing of data from market sampling and sampling at sea, from studies of meristic counts and measures for separating stocks and from tagging experiments.

The increased demands made on the Secretariat by the channelling of data through it, and by the accumulation of the statistics of the Commission for past years, make it necessary that the presentation of data should be made on more systematic lines and that a system of machine computing and tabulating be initiated.