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NORTHWEST ATLANTIC FISHERIES

SAMPLING YEARBOOK
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PREFACE

The ICNAF Sampling Yearbook has been issued annually since 1958 and has played a fundamental role in fish stock assessments carried out by the Assessments Subcommittee of STACRES. With the recent introduction of more rigorous sampling requirements and the greatly increased coverage of species and areas, the volume of sampling data has increased steadily with time. Consequently, the publication of the traditional volume of length and age frequencies and age-length keys was discontinued after Vol. 17 for 1972 and replaced by an annual listing of commercial and research sampling data contributed by member countries.

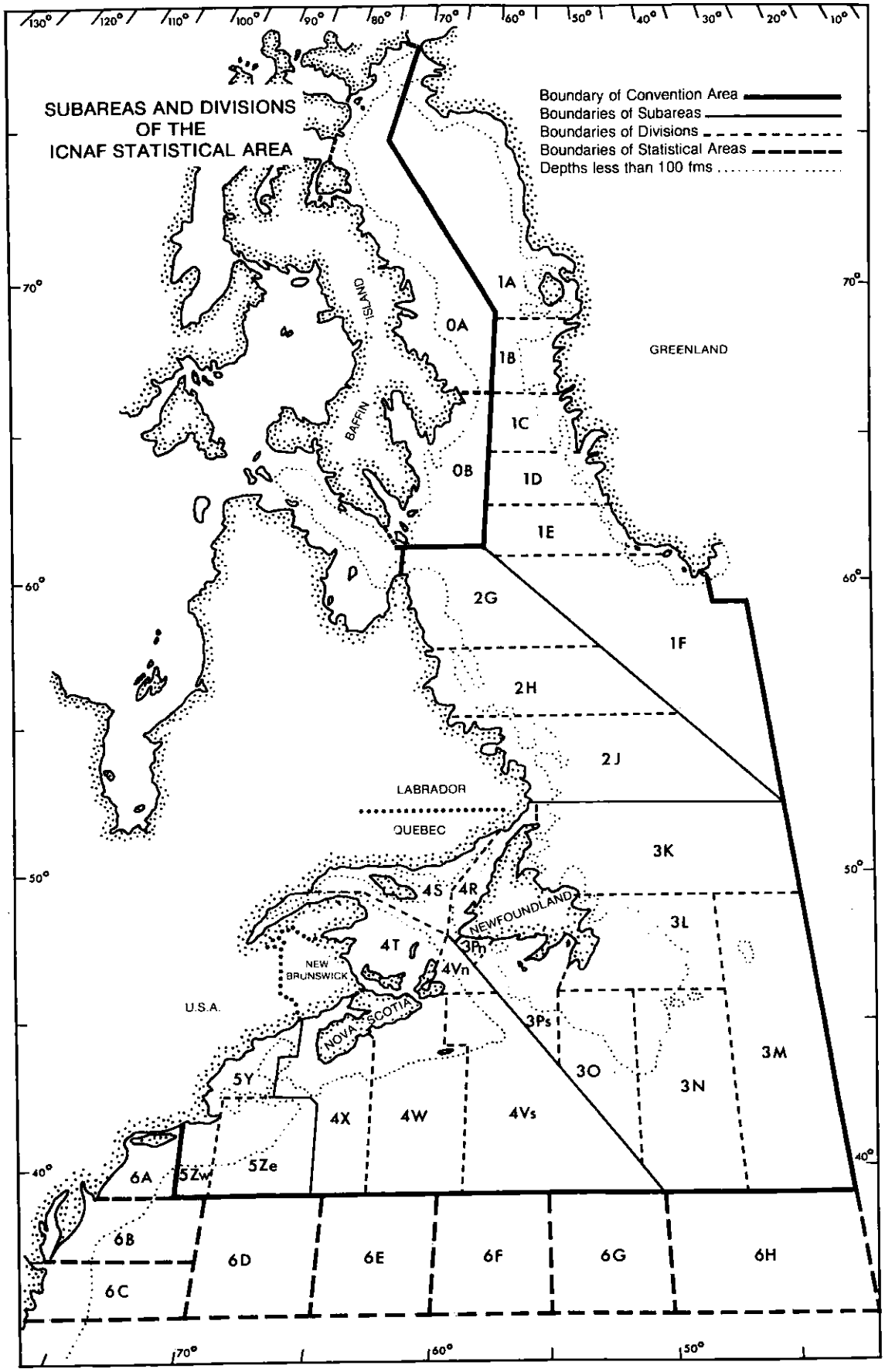
This issue of Sampling Yearbook is set out in four parts: Part 1 describes the ICNAF sampling requirements; Part 2 contains a list of countries which reported data for 1977; Part 3 contains, in a series of tables arranged by species, lists of available 1977 sampling data pertaining to commercial fisheries; and Part 4 contains a list of research sampling data for 1977.

All available commercially-oriented sampling data for 1970 onwards have been computerized to provide for the rapid retrieval of data on computer printouts to meet specific requests. Copies of length frequencies, age-length keys and computed age frequencies (where applicable) will be forwarded upon request to institutions and/or individual scientists involved in fisheries research in the Northwest Atlantic. All requests should specify the actual sampling data required, indicating at least the species, country and division.

The Secretariat is grateful to those countries who have contributed sampling data and to those scientists who have continued to support the need for more adequate sampling of the Northwest Atlantic fisheries with a view to providing better assessments of the stocks.

December 31, 1980

V. M. Hodder
Assistant Executive Secretary


SUBAREAS AND DIVISIONS
OF THE
ICNAF STATISTICAL AREA
Boundary of Convention Area
Boundaries of Subareas
Boundaries of Divisions
Boundaries of Statistical Areas
Depths less than 100 fms
GREENLAND
BAFFIN ISLAND
LABRADOR
QUEBEC
NEWFOUNDLAND
NEW BRUNSWICK
NOVA SCOTIA
U.S.A.
0A
0B
1A
1B
1C
1D
1E
1F
2G
2H
2J
3K
3L
3M
3N
3O
3Ps
3Pn
4R
4S
4T
4Vn
4Vs
4W
4X
5Y
5Ze
5Zw
6A
6B
6C
6D
6E
6F
6G
6H
130°
120°
110°
100°
90°
80°
70°
60°
50°
40°
30°
20°
10°
70°
60°
50°
40°

CONTENTS

PART 1

ICNAF Sampling Program

1. Introduction

In "A Fishery Research Program for the Northwest Atlantic", adopted by the Commission at its 1953 Annual Meeting (*ICNAF Annu. Proc.*, Vol. 3, page 23), the need for catch sampling was emphasized as follows: "In order to recognize the effect of fishing, it is necessary to record the lengths of the fish in adequate samples of catches, showing fish discarded and fish retained. This is considered essential for all the fisheries for the important species by all the participating countries throughout the Convention Area. The total range of fish caught can be sampled only at sea by specially trained observers. The sea sampling of the sizes retained should be supplemented by sampling of landings ashore."

At its 1956 Annual Meeting, the Commission approved the following recommendation of the Standing Committee on Research and Statistics (STACRES): "For each species sampled, each country should report to the Secretariat the sizes, ages, weights and sexes of the fish sampled by place and time of capture. The Commission should publish these statistics" (*ICNAF Annu. Proc.*, Vol. 6, page 11). The first issue of Sampling Yearbook was published in 1958, containing sampling data for the years 1955 and 1956. This was the beginning of the ICNAF sampling program.

During the years since the inception of the program, there have been many recommendations for improvements in relation to both the quantity and quality of the required data, and the need for full participation by member countries. In Volume 19 of ICNAF Sampling Yearbook, a first attempt was made to outline the present sampling requirements. The outline, along with proposed changes, was reviewed and endorsed by the Sampling and Statistics Subcommittee of STACRES in 1976 (*ICNAF Redbook* 1976, page 130).

2. Minimum Sampling Requirements

At its 1974 Annual Meeting, STACRES reviewed several aspects of the sampling program. In reiterating the necessity for all member countries to adequately sample their commercial fisheries for length and age composition of catches, the minimum sampling requirement was revised to read as follows:

"That the ICNAF sampling requirement should be specified at one sample per 1,000 tons of fish caught for each division, quarter of year, and gear. As an approximate guideline, such samples should consist of 200 fish from the entire length range for length composition and one fish per centimeter length group for age composition."

Sampling data must be "in sufficient quantity and detail to enable the calculation of the length and age composition of the commercial catches by stock area on a monthly basis" (*ICNAF Redbook* 1973, page 54). However, it is emphasized that the sampling data must be reported by division (or subdivision, where applicable) and not by stock area, in order to achieve uniformity in reporting and subsequent data-processing. Furthermore, in cases where the data for a species are required to be reported by sex, it is necessary that twice the number of specimens be collected for length and ageing in order to produce usable age-length keys.

The reported length frequency data should reflect the length composition of the catches made in each division (or subdivision) and month. Sampling should be more frequent when catches are high, and appropriate weighting should be applied to the individual samples to ensure that the monthly length frequencies represent the monthly catches.

3. Source of Sampling Data

In the past, sampling data have usually been classified as research, exploratory or commercial, depending on the type of fishing operations being undertaken at the time when the samples were collected. There has often been some confusion over the use of the terms, particularly in regard to the applicability of the various types of sampling data for assessment work, and some clarification is necessary.

a) Research. These samples are taken on true research vessels, operating independently of the commercial fishing fleet and using true research vessel fishing gear (e.g. otter trawl, with codend meshes considerably different from those in commercial trawls, or with codends lined or covered with small-meshed material irrespective of the mesh size of the codend). Because these

samples are not representative of commercial operations, they cannot be applied to the nominal catches, but are often of value for predicting future recruitment. Research samples are usually the outcome of survey programs to generate abundance and recruitment indices.

b) Commercial. Samples taken from the catches of exploratory and/or commercial fishing vessels using gear normally used for commercial fishing (in accordance with ICNAF trawl regulations, where applicable) should be classified as commercial samples. Such sampling implies that the escapement from the codend is not restricted by codend liners or topside covers or chafers and that the samples are representative of the commercial catches. These samples represent the commercial removals from the stocks and are essential for stock assessments.

In cases where samples are taken from the catches of research and/or exploratory vessels using commercial-type gears (e.g. trawls in which mesh selection is in accordance with the ICNAF mesh regulations), and where the fishing was carried out in association with commercial fishing operations, the data should be reported as "research vessel" data, with a note on the sampling form indicating the applicability of the data to commercial fishing (*ICNAF Redbook* 1977, page 67).

4. Sampling of Catches *versus* Landings

Commercial samples may be taken at sea from catches before any discarding has occurred (the term "discarding", as used here, implies fish thrown overboard and not included in the nominal catches, as opposed to fish used for fishmeal and included in the nominal catch), from catches after discarding, from landed catches at the dock or processing plant prior to discarding, or from landed catches after discarding. Thus commercial samples should be designated by type as follows:

a) Catch. The samples should be designated as catch samples, if it is fairly certain or definitely known that no discarding has occurred prior to sampling, whether the samples are taken from the catches at sea or taken from the landed catch at the dock or in the processing plant.

b) Landing. The samples should be designated as landing samples, whether they are taken at sea or in port, if it is known that discarding of small fish has occurred prior to sampling.

c) Discards. Every effort should be made to obtain representative samples of discarded fish, particularly in cases where the samples reported normally reflect the landings.

In some countries the only opportunity for sampling is of landings of fish that have been sorted into market categories (i.e. large, medium, and small). Samples taken in this way must be properly weighted (by the catch or landing for each category) and combined into a representative sample of the catch (or landings) prior to submission.

5. Length Sampling Data

Length measurements should always be taken of fish which are randomly sampled from the actual catches (or landings) and which are in the natural condition (round fresh fish). If the fish are measured in any other condition (e.g. gutted or dressed), necessitating the use of conversion factors, the appropriate conversion of the length measurements to those representative of "whole fresh" fish should be made before the length frequencies are reported.

At the 1975 Annual Meeting, there was some discussion on the proper length to be measured for the various species, i.e. fork length and total length (*ICNAF Redbook* 1975, page 79). In the light of evidence brought forward that the method of measuring differs among countries for the different species, it was strongly emphasized that information on measuring methods be reported by countries in their annual sampling notes. In order to ensure that the measuring method is recorded for all samples, it was recommended that provision be made on the standard sampling forms for countries to report the type of length measurement appropriate to the sampling data reported on the form. The revised forms (for soliciting 1975 and subsequent sampling data) provide for the recording of the various types of length measurements as follows:

Fork length - from the tip of the snout to the apex of the V forming the fork of the tail, for species with forked tails.

Total length - from the tip of the snout to the tip of the longest lobe of the tail when the lobe is extended posteriorly in line with the body. This is sometimes referred to as greatest total length. For fishes with non-forked tails, only total length is appropriate.

Other (to be specified) - for example, mantle length for squids, upper valve greatest diameter for scallops, carapace length for shrimps, etc.

In addition to indicating the type of length measurement (as noted above), it is very important that countries provide the method of recording the measurements as follows:

Nearest cm (rounded) - measurements are recorded to the nearest centimeter (i.e. fish in the length range 29.5-30.4 cm are actually recorded as 30 cm).

Cm below (truncated) - measurements are recorded to the centimeter below (i.e. fish in the length range 30.0-30.9 cm are recorded as 30 cm).

Other (to be specified) - for example, capelin are to be measured in half-cm units, and should be recorded to the nearest half-cm or half-cm below.

6. Age Sampling Data

In order to assess the status of fish stocks by means of analytical models such as "Virtual Population" or "Cohort" analyses, realistic estimates of the age compositions of the catches are essential. The usual procedure is to collect substantial length composition data as being representative of the commercial catches of a species in a particular area over a given period of time. These data are supplemented by additional material for ageing, from which age-length keys are constructed. The representative length compositions are converted to age compositions by the application of the age-length keys to the length frequencies. These age composition estimates are then weighted by the catches to estimate the removals at age from the stock.

While the samples for length composition represent the basic sampling units, and these must be composed of fish randomly selected from the catches (or landings), samples taken to provide material for ageing may consist of fish which are randomly selected from the catches or which are selected by a stratified procedure:

a) Random sampling for age means that the sample is a random subsample of the length composition or it may be a separate small random sample of the catch taken specifically for ageing, with no attempt made to select fish by length groups.

b) Supplemented random sampling for age implies that the basic age sample was taken as in (a), but some effort is made to supplement the basic sample with fish in the upper and lower parts of the length frequency distribution in order to broaden the length spectrum of the age-length key.

c) Stratified sampling for age implies that a certain number of fish are selected from each length group represented in the catch length composition, and that the fish are selected at random within each length group.

Random age samples are the least effective of the three types, in that the number of specimens in each sample is usually only a fraction of the number of fish in the length sample, and consequently the entire range of the length groups represented by the catch length composition will rarely be covered. Thus ages cannot be properly assigned to those length groups in the length frequency where there are no ages in the corresponding length groups of the age-length key.

In contrast, stratified age samples are the most effective in that the length groups in the length frequency sample are usually also represented in the age-length key. This type of sample is also the most efficient in that the least number of fish are required to be taken for age determination.

7. Length Conversions

If the length measurements of fish taken for ageing are collected from specimens in the "round fresh" condition, the length groups in the length composition sample and those in the age-length key are directly comparable. If, on the other hand, the length composition sample consists of fish measured in the "round fresh" condition and the length measurements of the fish in the age sample are taken after the fish have been in frozen storage for a period of time, and, assuming that some shrinkage has occurred prior to measuring the frozen specimens, then the length intervals of the actual length composition data and of the age-length key are not directly comparable. The application of such an age-length key to the length composition data results in age compositions that are biased toward the higher age-groups. A very small shrinkage factor (say 3%) can result in serious bias in the calculated age compositions. It is therefore extremely important that the length measurements of fish from frozen age samples be adjusted by appropriate conversion factors to make them representative of "round fresh" fish, if the actual length samples are measured when the fish are "round fresh".

8. Weight Conversions

As in catch statistics, the weights reported in sampling data are required to be round fresh weights. Any correction factors that may be required to convert gutted or otherwise dressed fish (including freezing) may be found in "Conversion Factors: North Atlantic Species, 1970. *FAO Bull. Fish. Stat.* No. 25".

The proper application of length frequency data to obtain the length composition of the catch requires that the average weight of fish in the sample be given. This value is readily obtained if the sample weight is recorded at the time the sample is collected. If length sampling is carried out at sea where weighing may be difficult or impossible, the average weight of the reported length frequency should be calculated by applying an appropriate length-weight relationship.

Calculating the mean weight from length-weight regressions must be done with consideration for the possible bias in incorrect appplication. It is not correct to obtain the mean weight by applying the mean length of fish in the sample to a length-weight regression based on measurements of individual fish. The result will be an underestimate of the mean weight and a consequent overestimate of the number of fish in the catch. The non-linearity of the length-weight regression must be taken into account and this is done by applying a vector of weights-at-length to the length frequency.

9. Sampling by Sex

Differences in growth rate and maximum length between the male and female of many species (e.g. flatfishes, hakes, redfish, capelin) require that the sex of the sampled fish be determined. Failure to discriminate sex in these species results in unrealistic age distributions. There are two ways to proceed, the first of which is recommended when feasible:

a) Each sex should be treated as an independent sampling unit; that is, length frequency data and ageing data are collected for male and female as if they were separate species. However, the sex ratio must be reflected in the length frequency total for each sex, so that the "per mille" frequency of male and female combined total 1000. The mean length and the mean weight should always be given for each sex and not just for sexes combined.

b) In cases where sex is difficult to recognize while collecting length frequency data, the alternative is to determine the sex when the individual fish constituting the age samples are being examined. In this case, it is important that the selection of fish at each length interval be random with respect to sex, in order to ensure that the sex ratio of fish at each length interval in the sample reflects the true sex ratio of the corresponding length in the catch. The resulting age-length keys (male and female separate) should upon application to the length frequency (male and female combined) result in age frequencies of males and females that are representative of the age compositions of the catches by sex.

10. Length Intervals and Sexing Criteria

At the 1974 Annual Meeting, the Statistics and Sampling Subcommittee reviewed the length groups to be used for the reporting of length frequencies and age-length keys, for most of the species sampled in the ICNAF Area, and specified the particular species for which it is essential that the data be provided by sex (males and females separately). The following list also includes changes agreed to at the 1975 Annual Meeting:

Species	Length Group
Atlantic cod (*Gadus morhua*)	3 cm
Pollock (=Saithe) (*Pollachius virens*)	3 cm
Cusk (*Brosme brosme*)	3 cm
White hake (*Urophycis tenuis*)	3 cm
Wolffishes (*Anarhichas* sp.)	3 cm
Roundnose grenadier (*Macrourus rupestris*)	3 cm (by sex)
Haddock (*Melanogrammus aeglefinus*)	2 cm
Greenland cod (*Gadus ogac*)	2 cm
Red hake (*Urophycis chuss*)	2 cm
American plaice (*Hippoglossoides platessoides*)	2 cm (by sex)
Witch flounder (*Glyptocephalus cynoglossus*)	2 cm (by sex)
Yellowtail flounder (SA 3-4) (*Limanda ferruginea*)	2 cm (by sex)
Greenland halibut (*Reinhardtius hippoglossoides*)	2 cm (by sex)
Winter flounder (*Pseudopleuronectes americanus*)	2 cm (by sex)
Summer flounder (*Paralichthys dentatus*)	2 cm (by sex)
Redfish (*Sebastes* sp.)	1 cm (by sex)
Silver hake (*Merluccius bilinearis*)[1]	1 cm (by sex)
Yellowtail flounder (SA 5-6) (*Limanda ferruginea*)	1 cm (by sex)
Windowpane flounder (*Scophthalmus Aquosus*)	1 cm (by sex)
Atlantic herring (*Clupea harengus*)	1 cm
Atlantic mackerel (*Scomber scombrus*)[2]	1 cm
Atlantic butterfish (*Peprilus triacanthus*)	1 cm

Species	Length Group
Alewife (*Alosa pseudoharengus*)	1 cm
Atlantic argentine (*Argentina silus*)	1 cm
Squids (*Illex* and *Loligo*)	1 cm
Capelin (*Mallotus villosus*)	½ cm (by sex)
Sea scallops (*Placopecten magellanicus*)	½ cm
Northern deepwater prawn (*Pandalus borealis*)	1 mm (by sex)

Other species not listed above should initially be reported by 1-cm length groups.

[1] At the 1975 Annual Meeting, it was recommended that silver hake be reported by 1-cm length groups and also by sex, instead of by 2-cm length groups as in the past. Length frequencies not reported by sex must be supported by age-length keys for males and females separately.

[2] At the 1975 Annual Meeting, it was recommended that length frequencies and age-length keys reported for mackerel be based on measuring the fork length to the centimeter below.

11. ICNAF Sampling Forms (Rev. 01/77)[3]

The completeness of the ICNAF data base, with regard to sampling data for the major commercial fisheries in the Northwest Atlantic, depends entirely on the extent to which member countries of ICNAF sample the catches of their fishing fleets and report these statistics to the Secretariat. As the ICNAF Sampling Program has gradually evolved over the years since its introduction in the early 1950's, various types of forms have been adopted for use by member countries in reporting their sampling data to the Secretariat. More recently, with the need for standardization to facilitate computer-processing of the data, the basic information required has been consolidated into two forms, referred to as ICNAF Sampling Form 1 and Sampling Form 2.

a) Sampling Form 1 is designed for use in reporting sampling data for species for which both length and age data are available. For each quarter of the year and for each gear, division (or subdivision) and species, a separate sheet must be used. Three columns are provided for recording the "per mille" length frequencies by month within a quarter; it is very important that the applicable length group used be indicated. The main body of the sheet is for the age-length key for the quarter, expressed as the actual numbers of fish sampled for age (not on a "per mille" basis). The bottom section of the form is for providing the "per mille" age composition in each of the three months. The box in the lower right part of the form (number of age samples making up the age-length key) must be completed.

b) Sampling Form 2 is designed for use in reporting length compositions when no age data are available. The layout is similar to Sampling Form 1 except that more columns are provided for recording length frequencies.

For species which are required to be reported by sex, if both length and age data are available for male and female separately, use separate sheets of Sampling Form 1 for reporting the data for each sex. However, the sex ratio must be reflected in the length frequency total for each sex, so that the "per mille" frequency of male and female combined total 1000. For example, if a length frequency consisted of 200 fish, of which 90 were male and 110 were female, then the frequencies recorded on the sampling sheets should total 450 for male and 550 for female, after applying the appropriate conversion factor.

If age-length keys are not normally available for certain species (e.g. squids), the monthly length frequencies (per mille) may be reported on Sampling Form 2. In the case of species required to be reported by sex, the frequencies for male and female should be recorded in adjacent columns of the same sheet and reflect the sex ratio as indicated in the preceding paragraph.

The details required below each length frequency on both Sampling Forms 1 and 2 must be as complete as possible. The "number of samples" (both length and age) and the "number of fish measured" must always be given, as these are used to assess the adequacy of sampling in relation to the minimum sampling requirements. While the mean length of fish in each length frequency can readily be calculated, the "mean weight of fish" in the length frequency is particularly important, as this is used as a weighting factor to estimate the length and age composition of the catch. This weight must, of course, be expressed as "round fresh" weight, as opposed to gutted or otherwise dressed weights. Information on "gear size" and "depth range" is often very useful in evaluating how applicable the sampling data reported are to commercial fishing operations.

[3] These sampling forms and notes were replaced in 1979 by the new NAFO sampling forms CFS-1 and CFS-2.

INTERNATIONAL COMMISSION FOR THE NORTHWEST ATLANTIC FISHERIES

AGE/LENGTH TABLE FOR SPECIES REPORTED IN 1-CM, 2-CM OR 3-CM LENGTH GROUPS

Year:	Country:	Species:	
Quarter:	Division (or Subdivision):	Gear:	Sex (where applicable):
Research, Exploratory or Commercial Fishing:		Catches or Landings:	Structure used for Ageing:
Check method of measuring fish (✓)	Fork length ☐ Mantle ☐ Total length ☐ Other _____	To nearest cm ☐ To cm below. ☐	Reported by:

Check length group used			LENGTH COMPOSITION OF CATCH PER MILLE Months in Quarter			AGE-LENGTH KEY FOR QUARTER (Number sampled by age-group and length)
1cm	2cm	3cm				
1	18-	18-				
2	20-	21-				
3	22-	24-				
4	24-	27-				
5	26-	30-				
6	28-	33-				
7	30-	36-				
8	32-	39-				
9	34-	42-				
0	36-	45-				
1	38-	48-				
2	40-	51-				
3	42-	54-				
4	44-	57-				
5	46-	60-				
6	48-	63-				
7	50-	66-				
8	52-	69-				
9	54-	72-				
0	56-	75-				
1	58-	78-				
2	60-	81-				
3	62-	84-				
4	64-	87-				
5	66-	90-				
6	68-	93-				
7	70-	96-				
8	72-	99-				
9	74-	102-				
0	76-	105-				
1	78-	108-				
2	80-	111-				
3	82-	114-				
4	84-	117-				
5	86-	120-				
TOTALS						

This form was replaced in 1979 by new NAFO sampling form CFS-2.

				Number of length samples	Number of age samples in quarter
				Number of fish measured in each month	
				Mean length of fish in each month (mm)	
				Mean weight of fish in each month (grams)	
				Range of depths in each month (meters)	
				Mesh or hook size (mm)	

AGE COMPOSITION (PER MILLE)

Month \ Age																TOTAL

Sampling Form 1 (Rev. 01/77)

INTERNATIONAL COMMISSION FOR THE NORTHWEST ATLANTIC FISHERIES

LENGTH FREQUENCIES FOR SPECIES REPORTED IN 1-CM, 2-CM OR 3-CM LENGTH GROUPS

Year:	Country:	Species:	
Quarter:	Division (or Subdivision):	Gear:	Sex (where applicable):
Research, Exploratory or Commercial Fishing:		Catches or Landings:	
Check method of measuring fish (✓)	Fork length ☐ Mantle ☐ Total length ☐ Other ____	To nearest cm ☐ To cm below ☐	Reported by:

Check length group used			LENGTH COMPOSITION (PER MILLE) BY MONTH (and sex, where applicable)											
1cm	2cm	3cm												
1	18-	18-												
2	20-	21-												
3	22-	24-												
4	24-	27-												
5	26-	30-												
6	28-	33-												
7	30-	36-												
8	32-	39-												
9	34-	42-												
0	36-	45-												
1	38-	48-												
2	40-	51-												
3	42-	54-												
4	44-	57-												
5	46-	60-												
6	48-	63-												
7	50-	66-												
8	52-	69-												
9	54-	72-												
0	56-	75-												
1	58-	78-												
2	60-	81-												
3	62-	84-												
4	64-	87-												
5	66-	90-												
6	68-	93-												
7	70-	96-												
8	72-	99-												
9	74-	102-												
0	76-	105-												
1	78-	108-												
2	80-	111-												
3	82-	114-												
4	84-	117-												
5	85-	120-												
Total														
No. of samples														
No. fish meas.														
Mean length (mm)														
Mean weight (g)														
Depth range (m)														
Mesh/hook (mm)														

This form was replaced in 1979 by new NAFO sampling form CFS-1.

NOTE: If reporting frequencies by sex, use groups of 3 columns above headed 'Male', 'Females', and 'Total'.

Sampling Form 2 (Rev. 01/77)

PART 2

Summary of Sampling Data, 1977

1. Introduction

Sampling data reported to the Secretariat should be accompanied by notes on sampling procedures. These notes should contain descriptions of how the length and age samples are collected so that any limitations on the use of the data can be recognized and the correct interpretations applied. Information on the use of conversion factors and the method of determining the mean weight of fish in the samples is essential for the proper application of the data to stock assessment problems. However, in nearly all cases, the sampling data were not accompanied by suitable descriptions of the procedures used, other than those recorded on the reporting forms, such as the method of measuring (fork length, total length, etc.), the recorded measurement (nearest cm, cm below, etc.), and the type of sample (research or commercial). Such parameters, when given, form part of the sample descriptor in the sampling data base. The "Notes on Sampling Data" (e.g. see *ICNAF Samp. Yearb.* Vol. 20, pages 17-20) are not repeated in this volume, since no new information have been provided.

2. Summary of Data Relevant to Commercial Fisheries

The following is a list of species by divisions for which commercially-oriented sampling data (see Part 3) were received from the various countries for 1977.

Country	Species	Divisions
Bulgaria	Silver hake	- 4W
	Atlantic mackerel	- 5Zw, 6A, 6B, 6C
	Capelin	- 4W
	Squid-*Illex*	- 4W
Canada (M)	Atlantic cod	- 3L, 3Ps, 4R, 4S, 4T, 4Vn, 4Vs, 4W, 4X, 5Ze
	Haddock	- 3Ps, 4W, 4X, 5Ze
	Atlantic redfish	- 2J, 3L, 3M, 3O, 3Pn, 3Ps, 4R, 4S, 4T, 4Vn, 4Vs, 4W, 4X
	Pollock	- 4Vs, 4W, 4X, 5Ze
	American plaice	- 4R, 4S, 4T, 4Vn, 4Vs, 4W, 4X
	Witch flounder	- 3K, 4R, 4T, 4Vn, 4Vs, 4W, 4X
	Yellowtail flounder	- 4Vs
	Winter flounder	- 4T, 4X
	White hake	- 3Ps, 4R, 4T, 4Vn, 4Vs, 4X
	Atlantic herring	- 4Vn, 4W, 4X, 5Y, 5Z
	Atlantic mackerel	- 4T, 4Vn, 4X
Canada (N)	Atlantic cod	- 2H, 2J, 3K, 3L, 3M, 3N, 3O, 3Pn, 3Ps, 4R
	Haddock	- 3Ps
	Atlantic redfish	- 2H, 2J, 3K, 3L, 3M, 3N, 3O, 3Pn, 3Ps, 4R
	American plaice	- 3K, 3L, 3N, 3O, 3Ps
	Witch flounder	- 3K, 3L, 3N, 3O, 3Ps, 4R, 4S
	Yellowtail flounder	- 3L, 3N, 3O, 3Ps
	Greenland halibut	- 2H, 2J, 3K, 3L, 4R
	Atlantic mackerel	- 3K, 3L, 4R, 4T
	Capelin	- 2J, 3K, 3L, 3N, 3O, 3P, 4R, 4S
	Squid-*Illex*	- 3L
Cuba	Silver hake	- 4W, 4VWX, 4X
	Squid-*Illex*	- 4W
Denmark (G)	Atlantic cod	- 1B, 1D, 1E, 1F
	Greenland cod	- 1B, 1D
France (SP)	Atlantic cod	- 4R
	Squid-*Illex*	- 3Ps
	Prawn	- 0A

Country	Species	Division
Fed. Rep. Germany	Atlantic cod	- 1F, EG, 2J, 3K
	Atlantic redfish	- 2J, 3K
	Atlantic herring	- 5Ze
	Atlantic mackerel	- 5Y, 5Ze
German Dem. Rep.	Atlantic cod	- 2J, 3K
	Greenland halibut	- 2G, 2H
	Roundnose grenadier	- 2H
	Atlantic mackerel	- 6A, 6B
	Capelin	- 3K
Italy	Squid-*Illex*	- 3L
Japan	Atlantic butterfish	- 6A, 6B, 6C
	Capelin	- 2J, 3K, 3L, 3N
	Squid-*Loligo*	- 6A, 6B, 6C
	Squid-*Illex*	- 4Vs, 4W, 4X, 6A, 6B
Norway	Capelin	- 3N
Poland	Atlantic cod	- 2J, 3K
	Witch flounder	- 3K
	Greenland halibut	- 2J, 3K
	Atlantic herring	- 5Ze
	Atlantic mackerel	- 6A, 6B, 6C
	Capelin	- 3K
	Squid-*Illex*	- 4W, 5Z
Portugal	Atlantic cod	- 1B, 1C, 1D, 3L, 3N, 3O
	Polar cod	- 1B, 1C, 1D
Spain	Atlantic cod	- 3L, 3M, 3N, 3O
	Atlantic redfish	- 3L, 3M
	American plaice	- 3L, 3N, 3O
	Yellowtail flounder	- 3N, 3O
USSR	Atlantic cod	- 2J, 3M, 4W
	Haddock	- 4W
	Atlantic redfish	- 3K, 3L, 3M, 4W
	Silver hake	- 4W, 5Ze, 5Zw
	Red hake	- 5Ze, 5Zw
	American plaice	- 3L
	Witch flounder	- 3K
	Greenland halibut	- 0B, 1C, 1D, 2J
	Roundnose grenadier	- 3K
	Atlantic mackerel	- 4W, 5Zw, 6A
	Atlantic argentine	- 4W
	Squid-*Illex*	- 4W
UK	Atlantic cod	- 3K, 3M
USA	Atlantic cod	- 5Y, 5Ze, 5Zw
	Haddock	- 4X, 5Y, 5Ze
	Atlantic redfish	- 4W, 4X, 5Y, 5Ze
	Silver hake	- 5Y, 5Ze, 5Zw, 6A
	Red hake	- 5Zw, 6A
	Pollock	- 4X, 5Y, 5Ze
	American plaice	- 5Y, 5Ze
	Witch flounder	- 5Y
	Yellowtail flounder	- 5Ze, 5Zw
	Winter flounder	- 5Y, 5Ze, 5Zw, 6A
	Summer flounder	- 5Ze, 5Zw, 6A
	Scup	- 5Zw, 6A
	Atlantic herring	- 5Yn, 5Ys
	Atlantic mackerel	- 5Y, 5Ze, 5Zw, 6A
	Atlantic butterfish	- 5Zw, 6A

Country	Species	Division
USA (cont'd)	Squid-*Loligo*	- 5Ze, 5Zw, 6A
	Squid-*Illex*	- 5Y, 5Ze, 5Zw, 6A
	Scallops	- 5Ze, 6A

3. Summary of Research Vessel Sampling Data

The following summary of research vessel sampling data available at the Secretariat is a listing by country, species and division of samples tabulated by species in Part 4 (Table 27). As far as it can be ascertained, these samples pertain to pure research vessel operations, i.e. survey data not connected with commercial fishing operations.

Country	Species	Division
Cuba	Atlantic cod	- 4VWX
	Haddock	- 4VWX
	Atlantic redfish	- 4VWX
	Atlantic argentine	- 4VWX
Denmark (G)	Atlantic cod	- 1B, 1D, 1E
	Atlantic redfish	- 1A, 1B, 1C, 1D, 1E
	American plaice	- 1A, 1B, 1C, 1D, 1E
	Greenland halibut	- 1A, 1B, 1C, 1D, 1E
	Greenland cod	- 1D, 1E
	Striped wolffish	- 1B
France (SP)	Atlantic cod	- 2J, 3K, 3L, 3Pn, 3Ps, 4R
	Atlantic redfish	- 3K, 3Pn, 3Ps, 4R
	American plaice	- 3K, 3Ps
	Witch flounder	- 3Ps
	Greenland halibut	- OB
Fed. Rep. Germany	Atlantic cod	- 1D, 1E, 1F, 2J, 4X, 5Y, 5Ze
	Haddock	- 4X, 5Y, 5Ze
	Mentella	- 2J
	Silver hake	- 5Y, 5Ze
	Pollock	- 5Y, 5Ze
	American plaice	- 2J
	Greenland halibut	- 2J
German Dem. Rep.	Atlantic herring	- 5Ze, 5Zw
	Atlantic Mackerel	- 5Ze, 5Zw
USSR	Capelin	- 2J, 3K

PART 3

List of Sampling Data for Commercial Fisheries, 1977

1 Introduction

The publication of detailed sampling data in the Sampling Yearbook was discontinued following the issue of Vol. 17 for the year 1972. Instead, as recommended by STACRES at the 1974 Annual Meeting (*ICNAF Redbook* 1974, page 70), the Yearbook starting with Vol. 18 contains lists of available data, the details of which are made available upon request to scientists and/or research institutes involved in Northwest Atlantic fisheries research.

Tables 1 to 26 in this volume contain lists of available length and age sampling data by species, arranged by country, division, gear and month. Nearly all of these data were reported as commercial samples. However, some samples reported as "research" have been included, where the type of gear used or the gear size reported indicated that they were relevant to commercial fishing operations. Where sampling data have been reported by sex, the table entries under "Number measured" and "Number aged" indicate the numbers of males and females sampled.

Sampling data relevant to pure research vessel operations (survey data not connected with commercial fisheries) are listed in Part 4 of this issue.

2. Abbreviations Used

The following abbreviations are used to designate the "gear" and "type of sample" in Tables 1 to 26 of Part 3, and also in the listing of research samples in Part 4:

GEAR

OTB	-	Bottom otter trawl (side and stern)
OTM	-	Midwater otter trawl (side and stern)
PTB	-	Bottom pair trawl (2 boats)
PTM	-	Midwater pair trawl (2 boats)
SN	-	Seine net (Danish and Scottish seines)
SB	-	Beach seines
PS	-	Purse seines
GN	-	Gillnets (set and drift)
LL	-	Longlines (set)
LHP	-	Handlines and pole-lines
FPN	-	Uncovered pound nets
FWR	-	Weirs, barriers, fences, etc.
DRB	-	Boat dredges
NS	-	Gear not specified

TYPE OF SAMPLE

CC	-	Commercial catch
CL	-	Commercial landing
RC	-	Research catch
RL	-	Research landing

Table 1. Atlantic cod length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M)	3L	OTB	Jul	CL	1	300	1	40
	3Ps	OTB	Jun	CL	2	613	2	70
			Aug	CL	1	203	1	33
			Oct	CL	1	182	1	35
	4R	OTB	Feb	CL	6	1752	9	454
			Mar	CL	3	899		
			Apr	CL	4	1303	10	543
			May	CL	6	1827		
			Jun	CL	1	200		
	4S	OTB	Apr	CL	1	353	1	67
			Jul	CL	1	200	2	91
			Aug	CL	1	200		
	4T	OTB	May	CL	4	813	10	360
			Jun	CL	6	1204		
			Jul	CL	1	200	2	51
			Sep	CL	1	200		
			Oct	CL	2	400	5	168
			Nov	CL	3	605		
		SN	May	CL	1	200	5	186
			Jun	CL	4	812		
			Jul	CL	6	1200	30	1033
			Aug	CL	16	3247		
			Sep	CL	8	1617		
		GN	Jun	CL	3	627	3	125
			Jul	CL	1	200	3	133
			Aug	CL	1	200		
			Sep	CL	1	200		
		LHP	Jun	CL	2	401	2	76
			Jul	CL	6	1070	13	516
			Aug	CL	7	1400		
	4Vn	OTB	Jan	CL	1	290	5	240
			Feb	CL	1	264		
			Mar	CL	3	910		
			Aug	CL	1	238	1	26
			Nov	CL	1	245	6	233
			Dec	CL	5	1455		
		SN	May	CL	1	300	2	99
			Jun	CL	1	197		
			Aug	CL	2	586	2	71
	4Vs	OTB	Feb	CL	2	484	6	316
			Mar	CL	4	1128		
			Jul	CL	1	238	2	81
			Sep	CL	1	300		
	4W	OTB	Mar	CL	4	1156	4	210
			Oct	CL	1	200	2	78
			Dec	CL	1	232		
		LL	Mar	CL	1	290	1	54
			Apr	CL	1	239	2	93
			Jun	CL	1	213		
	4X	OTB	Feb	CL	1	201	2	109
			Mar	CL	1	198		
			Sep	CL	4	743	4	142
			Nov	CL	1	227	2	112
			Dec	CL	1	253		
		LL	Jan	CL	1	276	3	181
			Feb	CL	1	271		
			Mar	CL	1	256		

Table 1. Atlantic cod (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M) (cont'd)	4X	LL	Apr	CL	1	172	1	60
			Jul	CL	2	541	3	193
			Sep	CL	1	251		
			Dec	CL	1	237	1	66
	5Ze	OTB	Feb	CL	1	124	1	49
			Jun	CL	3	896	3	106
			Jul	CL	7	2049	8	308
			Aug	CL	1	300		
Canada (N)	2H	OTB	Aug	CL	4	379	-	-
	2J	OTB	Jul	CL	6	523	-	-
		GN	Aug	CL	7	776	-	643[1]
		LHP	Aug	CL	6	410	-	643[1]
		FPN	Aug	CL	9	2789	-	643[1]
	3K	OTB	Feb	CL	1	369	-	349
			Mar	CL	5	2267		
			Apr	CL	3	1131	-	377
			Oct	CL	1	478	-	66
		GN	Jul	CL	19	3066	-	1077[2]
		LL	Oct	CL	1	211	-	358[3]
		LHP	Sep	CL	3	849	-	358[3]
		FPN	Jun	CL	2	656	-	1077[2]
			Jul	CL	13	5594		
	3L	OTB	Feb	CL	2	907	-	262
			May	CL	3	1201		
			Jun	CL	2	589	-	458
			Jul	CL	1	659		
			Aug	CL	3	1358	-	495
			Sep	CL	4	1532		
			Oct	CL	1	248		
			Nov	CL	4	1204	-	363
			Dec	CL	2	1141		
		GN	Jun	CL	5	1322	-	1273[4]
			Jul	CL	4	524		
			Sep	CL	3	152	-	250[5]
		LL	Sep	CL	2	369	-	250[5]
		LHP	Jun	CL	5	1773	-	1273[4]
			Jul	CL	2	544		
			Sep	CL	7	951	-	250[5]
		FPN	May	CL	3	1655	-	149
			Jun	CL	14	4912		
			Jul	CL	10	2635	-	1273[4]
			Aug	CL	1	513		
	3M	OTB	Oct	CL	1	607	-	201
			Nov	CL	2	1139		
	3N	OTB	Jun	CL	2	1679	-	272
			Jul	CL	1	366	-	103
			Sep	CL	1	233		
	3O	OTB	May	CL	1	683	-	238
			Jun	CL	2	1108		
			Nov	CL	1	582	-	60
	3Pn	OTB	Mar	CL	3	1586	-	215
		LL	Mar	CL	8	3979	-	438
	3Ps	OTB	May	CL	3	1640	-	386
			Jun	CL	1	337		

Table 1. Atlantic cod (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (N) (cont'd)	3Ps	OTB	Nov	CL	3	1609	-	316
			Dec	CL	3	1666		
		GN	Jun	CL	6	1394	-	436[6]
			Jul	CL	4	989		
		LL	Sep	CL	8	2072	-	453
			Oct	CL	3	1234		
		FPN	Jun	CL	3	1234	-	436[6]
	4R	OTB	Jan	CL	3	2124	-	583
			Feb	CL	2	1148		
			Apr	CL	3	1390	-	825
			May	CL	1	624		
			Jun	CL	5	2295		
			Sep	CL	5	1121	-	323
		GN	Jun	CL	8	3139	-	508[7]
			Sep	CL	9	1241	-	391
			Oct	CL	1	155		
		FPN	Jun	CL	3	1419	-	508[7]
Denmark (G)	1B	FPN	Jun	CL	3	1399	1	216
			Jul	CL	1	274	-	-
	1D	OTB	Feb	CL	1	1307	2	284[8]
		GN	Jun	CC	1	42	1	42
			Oct	RC	5	206	5	205
			Nov	RC	1	30		
		LHP	Oct	RC	5	687	8	576
			Nov	RC	3	268		
		FPN	May	CC	2	169	2	698
			Jun	CC	2	2523		
	1E	OTB	Mar	CL	1	1170	2	284[8]
			Jun	CL	1	1033	1	228
	1F	OTB	Jul	CL	1	965	1	256
			Aug	CL	1	1210		
France (SP)	4R	OTB	Jan	RC	1	274	1	188
Fed. Rep. Germany	1F	OTB	Jan	CL	4	1843	6	452
	EG[9]	OTB	Feb	CL	1	330	2	286
			Mar	CL	2	640		
			Apr	CL	2	661	3	575
			May	CL	1	451		
			Jul	CL	3	778	3	516
			Aug	CL	2	482		
			Oct	CL	2	948	3	351
			Nov	CL	1	372		
	2J	OTB	Jan	CC	22	14832	13	633[10]
			Feb	CC	7	4661		
			Mar	CC	1	103		
	3K	OTB	Feb	CC	2	498	13	633[10]
German Dem. Rep.	2J	OTB	Feb	CC	2	142	2	142
	3K	OTB	Feb	CC	1	33	1	33
Poland	2J	OTB	Jan	CC	-	9890	-	1657
			Feb	CC	-	6466		
	3K	OTB	Feb	CC	-	1543	-	154

Table 1. Atlantic cod (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Portugal	1B	GN	Jul	CC	5	248	-	-
	1C	GN	Jun	CC	4	204	-	-
			Jul	CC	5	294	-	-
	1D	GN	Jun	CC	2	73	-	-
	3L	GN	Jul	CC	4	379	15	202
			Aug	CC	11	1144		
	3N	GN	Aug	CC	4	215	5	251
			Sep	CC	6	884		
	3O	GN	Aug	CC	2	82	2	84
			Sep	CC	1	103		
Spain	3L	PTB	Feb	CC	4	1362	17	870
			Mar	CC	14	5290		
			Apr	CL	19	7924	19	882
			May	CL	1	284		
			Jul	CC	2	1139	2	107
	3M	PTB	Apr	CC	5	1762	5	220
	3N	PTB	Jun	CC	19	9671	23	1300
			Jul	CC	18	9017	11	488
	3O	PTB	Mar	CC	2	377	2	175
			Jun	CC	2	545	2	115
USSR	2J	OTB	Jan	CC	42	14084	4	1198
			Feb	CC	2	1150		
	3M	OTB	Mar	CC	14	3899	-	-
	4W	OTB	Jul	CC	8	1590	-	-
			Sep	CC	2	135		
UK	3K	OTB	Feb	CL	1	222		
	3M	OTB	May	CL	1	616		
USA	5Y	OTB	Jun	CL	6	423		
			Jul	CL	8	665		
			Aug	CL	2	178		
			Oct	CL	3	189		
			Nov	CL	8	480		
			Dec	CL	7	407		
	5Ze	OTB	Jan	CL	4	509		
			Feb	CL	4	410		
			Mar	CL	4	349		
			Apr	CL	4	359		
			May	CL	6	531		
			Jun	CL	17	1673		
			Jul	CL	14	1318		
			Aug	CL	14	1304		
			Sep	CL	8	596		
			Oct	CL	8	546		
			Nov	CL	9	860		
			Dec	CL	7	696		
	5Zw	OTB	Apr	CL	1	157		
			Dec	CL	1	104		

[1] Same key used for GN, LHP and FPN.
[2] Same key used for GN and FPN.
[3] Same key used for LL and LHP.
[4] Same key used for GN, LHP and FPN.
[5] Same key used for GN, LL and LHP.
[6] Same key used for GN and FPN.
[7] Same key used for GN and FPN.
[8] Same key used for OTB in Div. 1D and 1E.
[9] East Greenland.
[10] Same key used for OTB in Div. 2J and 3K.

Table 3. Atlantic redfish (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M) (cont'd)	4T	OTM	Jun	CL	3	242/358		
	4Vn	OTB	Mar	CL	3	287/315		
			Aug	CL	3	376/225		
			Sep	CL	1	100/100		
			Oct	CL	1	89/117		
		OTM	Sep	CL	1	102/98		
	4Vs	OTB	Mar	CL	3	287/410		
			May	CL	1	61/138		
			Sep	CL	4	363/437		
			Oct	CL	1	107/93		
		OTM	Sep	CL	2	225/175		
	4W	OTB	Mar	CL	1	75/122		
			May	CL	1	133/67		
			Jun	CL	1	102/99		
			Jul	CL	1	62/138		
			Aug	CL	2	176/224		
			Sep	CL	1	84/116		
			Oct	CL	1	87/113		
	4X	OTB	Jun	CL	2	144/257		
Canada (N)	2H	OTB	Sep	CL	2	618/341		
	2J	OTB	Sep	CL	2	473/378		
			Oct	CL	1	253/304		
	3K	OTB	Feb	CL	1	105/297		
			Mar	CL	3	648/566		
			May	CL	1	155/210		
			Jul	CL	1	44/169		
			Sep	CL	1	347/225		
	3L	OTB	Jun	CL	1	186/168		
			Aug	CL	2	501/534		
			Sep	CL	2	539/445		
			Oct	CL	6	1009/1430		
			Nov	CL	2	365/663		
			Dec	CL	1	140/244		
		OTM	Jun	CL	2	299/446		
			Jul	CL	2	417/593		
			Aug	CL	1	240/312		
			Oct	CL	1	46/258		
	3M	OTM	Jun	CL	3	702/801		
			Jul	CL	4	816/1091		
			Aug	CL	2	357/514		
	3N	OTM	Aug	CL	1	152/249		
	3O	OTB	Mar	CL	1	156/283		
			Aug	CL	1	514/498		
			Sep	CL	3	1012/1316		
	3Pn	OTB	Mar	CL	1	127/277		
			Aug	CL	2	485/388		
			Sep	CL	1	194/280		
	3Ps	OTB	Mar	CL	1	84/148		
			May	CL	1	254/388		
			Aug	CL	1	349/322		
			Sep	CL	3	367/490		
			Nov	CL	2	657/720		
		OTM	Aug	CL	2	502/245		
			Nov	CL	1	180/249		
	4R	OTB	Feb	CL	1	154/195		

Table 3. Atlantic redfish (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Fed. Rep. Germany	2J	OTB	Jan	CC	5	968/1451	7	201/231
			Feb	CC	1	324/745		
	3K	OTB	Feb	CC	1	160/282	7	190/197
Spain	3L	PTB	Mar	CC	1	63/235		
			Apr	CC	6	557/631		
	3M	PTB	Apr	CC	1	145/119		
USSR	3K	OTB	Jul	CC	-	463/484	-	-
	3L	OTB	Feb	CC	-	2996/3682	1	124/164
	3M	OTB	Jàn	CC	-	2303/2225	1	167/129
			Apr	CC	-	596/1317	2	146/313
	4W	OTB	Aug	CC	2	400	-	-
			Sep	CC	4	786		
USA	4W	OTB	Jun	CL	2	98/102	-	-
			Jul	CL	1	71/29	-	-
			Oct	CL	1	73/27	-	-
			Dec	CL	2	92/108		
	4X	OTB	Mar	CL	-	89/111	-	-
			Apr	CL	2	73/127		
			May	CL	3	101/199	-	-
			Jun	CL	2	74/127		
			Jul	CL	2	81/121	-	-
			Sep	CL	1	68/32		
			Oct	CL	3	199/101		
			Nov	CL	3	172/128	-	-
			Dec	CL	1	50/50		
	5Y	OTB	Jan	CL	9	621/321		
			Feb	CL	9	460/461	27	71/69
			Mar	CL	11	547/575		
			Apr	CL	1	59/43		
			May	CL	7	331/412	17	92/88
			Jun	CL	10	437/564		
			Jul	CL	5	279/220		
			Aug	CL	12	763/456	20	102/101
			Sep	CL	3	182/121		
			Oct	CL	3	227/85	3	35/30
	5Ze	OTB	Feb	CL	2	104/96	-	-
			Mar	CL	2	111/102		
			Apr	CL	1	54/41		
			May	CL	1	77/21	-	-
			Jun	CL	1	72/37		
			Jul	CL	1	51/48	-	-
			Aug	CL	2	132/70		
			Oct	CL	1	74/31	-	-
			Nov	CL	2	110/100		

Table 4. Silver hake length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Bulgaria	4W	OTM	Jul	CC	2	400		
Cuba	4W	OTB	Apr	CC	4	5024	-	-
			May	CC	4	6453		
			Jun	CC	5	5414		

Table 4. Silver hake (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Cuba (cont'd)	4W	OTB	Jul	CC	4	6802	1	114/192
			Aug	CC	2	3734		
	4VWX	OTB	Jul	RC	6	2462	-	-
			Jul	RC	1	130/158	-	-
	4X	OTB	Apr	CC	2	2004	-	-
USSR	4W	OTB	Jul	CC	224	44960	-	350/349
			Aug	CC	69	13719		
			Sep	CC	42	8419		
		OTM	Jun	CC	25	5030	-	143/115
			Aug	CC	8	1600	-	-
	5Ze	OTB	Jan	CC	2	400	-	-
			Feb	CC	1	200		
			Mar	CC	3	600		
			Apr	CC	4	800	-	-
			May	CC	6	1267		
			Jun	CC	5	1020		
	5Zw	OTB	Jan	CC	1	200	-	-
			Feb	CC	15	3021		
			Mar	CC	9	1800		
USA	5Y	OTB	Apr	CL	6	280/374		
			May	CL	2	105/119		
			Aug	CL	2	92/117		
			Sep	CL	1	65/38		
			Oct	CL	3	136/171		
			Nov	CL	2	15/196		
	5Ze	OTB	Jul	CL	2	479/422		
			Aug	CL	13	595/756		
			Sep	CL	6	236/369		
			Oct	CL	1	42/67		
	5Zw	OTB	Feb	CL	1	100		
			Mar	CL	3	368		
			Apr	CL	2	177		
			May	CL	2	187		
			Jun	CL	1	145		
			Oct	CL	2	214		
			Nov	CL	2	230		
	6A	OTB	Jan	CL	1	190		
			Feb	CL	2	151		
			Oct	CL	2	241		

Table 5. Red hake length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USSR	5Ze	OTB	Jan	CC	5	1000		
			Feb	CC	2	400		
			Mar	CC	1	200		
			Apr	CC	2	400		
			May	CC	2	400		
			Jun	CC	2	400		
	5Zw	OTB	Jan	CC	1	200		
			Feb	CC	14	2800		
			Mar	CC	1	200		

Table 5. Red hake (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA	5Zw	OTB	Jan	CL	5	867		
			Apr	CL	6	275		
			May	CL	8	234		
			Jun	CL	3	198		
			Jul	CL	4	547		
			Aug	CL	7	672		
			Sep	CL	5	645		
			Oct	CL	4	378		
			Nov	CL	8	533		
			Dec	CL	9	748		
	6A	OTB	Jan	CL	4	917		
			May	CL	3	350		
			Jun	CL	5	302		
			Jul	CL	6	893		
			Aug	CL	2	243		
			Sep	CL	1	28		
			Oct	CL	2	145		

Table 6. Pollock length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M)	4Vs	OTB	Aug	CL	1	298	2	60
			Sep	CL	1	200		
	4W	OTB	Feb	CL	1	200	4	186
			Mar	CL	2	499		
			Apr	CL	2	500	3	147
			Jun	CL	1	300		
			Jul	CL	1	299		
			Aug	CL	3	900	7	339
			Sep	CL	3	759		
			Oct	CL	2	600		
			Nov	CL	3	895	8	366
			Dec	CL	3	813		
	4X	OTB	Jan	CL	1	240		
			Feb	CL	9	1863	20	789
			Mar	CL	10	2314		
			Apr	CL	4	892	6	227
			Jun	CL	2	499		
			Aug	CL	2	494	5	154
			Sep	CL	3	570		
			Oct	CL	3	744		
			Nov	CL	1	205	5	202
			Dec	CL	1	254		
		GN	May	CL	1	256	1	30
	5Ze	OTB	Jan	CL	1	205	4	162
			Feb	CL	3	655		
			Jul	CL	1	219	1	39
			Dec	CL	1	268	1	41
USA	4X	OTB	Aug	CL	1	71	1	15
	5Y	OTB	Jan	CL	2	132	3	50
			Mar	CL	1	102		
			Jul	CL	1	100	1	20
			Oct	CL	1	51		
			Nov	CL	2	220	6	120
			Dec	CL	3	318		

Table 6. Pollock (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA (cont'd)	5Y	GN	Mar	CL	2	200	2	39
			Jul	CL	2	200	2	40
	5Ze	OTB	Feb	CL	1	68	3	54
			Mar	CL	2	203		
			Apr	CL	1	50		
			May	CL	3	298	9	188
			Jun	CL	5	522		
			Jul	CL	3	302		
			Aug	CL	5	478	14	271
			Sep	CL	6	593		
			Oct	CL	3	290		
			Nov	CL	4	396	8	153
			Dec	CL	1	101		

Table 7. American plaice length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M)	4R	OTB	Jan	CL	1	47/143	1	14/27
			Apr	CL	1	57/143	2	35/55
			May	CL	1	114/86		
	4S	OTB	Jul	CL	1	2/198	1	2/35
	4T	OTB	Jun	CL	5	198/766	4	48/103
		SN	Jun	CL	4	204/596	4	48/87
			Jul	CL	5	190/810		
			Aug	CL	12	347/2052	22	221/500
			Sep	CL	5	204/751		
	4Vn	OTB	Jan	CL	1	57/95	2	32/44
			Mar	CL	1	60/140		
		SN	Jun	CL	6	321/879	6	72/159
			Jul	CL	4	179/621		
			Aug	CL	4	197/603	10	108/245
			Sep	CL	2	70/330		
	4Vs	OTB	Feb	CL	1	54/146	2	31/55
			Mar	CL	1	48/152		
			Apr	CL	2	165/235	2	31/47
			Aug	CL	2	136/236	3	49/68
			Sep	CL	1	69/131		
		SN	Jun	CL	1	67/133	1	19/26
	4W	OTB	Mar	CL	2	109/298	2	32/67
	4X	OTB	Sep	CL	1	87/113	-	-
Canada (N)	3K	OTB	Feb	CL	3	317/1417	-	243/462
			Mar	CL	4	459/1125		
			Apr	CL	4	322/1168	-	137/272
		GN	Jul	CL	8	724/1299	-	171/301
			Sep	CL	1	40/90	-	38/59
	3L	OTB	Feb	CL	1	294/289	-	108/158
			Mar	CL	1	210/381		
			May	CL	5	1668/1443	-	204/279
			Jun	CL	1	764/718		
			Jul	CL	1	47/307		
			Aug	CL	5	690/968	-	247/400
			Sep	CL	3	453/870		
			Oct	CL	4	735/972		
			Nov	CL	3	357/845	-	201/290
			Dec	CL	2	390/438		

Table 7. American plaice (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
CANADA (N) (cont'd)	3N	OTB	Jan	CL	2	248/367	-	145/216
			Mar	CL	1	91/163		
			Apr	CL	1	250/337	-	150/195
			May	CL	3	681/668		
			Jul	CL	3	409/526	-	260/380
			Aug	CL	4	473/625		
			Sep	CL	2	391/373		
			Oct	CL	2	370/394	-	256/339
			Nov	CL	4	646/715		
	3O	OTB	May	CL	1	67/147	-	63/95
			Jun	CL	1	260/215		
			Aug	CL	2	270/354	-	93/134
			Sep	CL	2	287/655		
	3Ps	OTB	Mar	CL	2	458/766	-	152/277
			Apr	CL	1	56/633	-	92/225
			May	CL	2	89/783		
			Oct	CL	1	82/165	-	122/191
			Nov	CL	2	371/623		
Spain	3L	PTB	Feb	CC	1	36/165		
			Mar	CC	11	1056/2140		
	3N	PTB	Mar	CC	2	182/375		
			Jun	CC	1	54/106		
	3O	PTB	Mar	CC	1	64/117		
			Apr	CC	1	51/40		
USSR	3L	OTB	Jul	CC	11	3119/2672		
USA	5Y	OTB	Apr	CL	-	304		
			May	CL	-	255		
			Jun	CL	-	147		
	5Ze	OTB	Feb	CL	-	158		
			May	CL	-	36		
			Jun	CL	-	151		
			Sep	CL	-	117		
			Oct	CL	-	138		

Table 8. Witch flounder length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M)	3K	OTB	Mar	CL	1	157/43	-	-
	4R	OTB	Feb	CL	1	35/71	1	14/20
	4T	SN	Jun	CL	1	70/130	1	15/16
	4Vn	OTB	Mar	CL	1	104/96	1	14/15
			May	CL	1	57/143	1	11/20
		SN	May	CL	1	49/151	3	40/63
			Jun	CL	2	100/300		
			Aug	CL	1	41/159	3	41/53
			Sep	CL	2	125/275		
	4Vs	OTB	Jan	CL	1	119/81	5	81/83
			Feb	CL	1	88/113		
			Mar	CL	3	291/309		
	4W	OTB	Feb	CL	1	69/131	2	24/36
			Mar	CL	1	50/142		
		SN	Apr	CL	2	252/148	-	-
	4X	OTB	Mar	CL	1	151/48	1	14/5

Table 8. Witch flounder (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (N)	3K	OTB	Feb	CL	2	1177/869	-	317/397
			Mar	CL	2	267/313		
			Apr	CL	3	619/788	-	118/171
			Oct	CL	1	269/239	-	66/90
		GN	Jul	CL	10	564/1330	-	202/251
	3L	OTB	Sep	CL	1	706/388	-	98/109
			Dec	CL	1	258/83	-	31/28
		GN	Sep	CL	1	57/43	-	37/34
	3N	OTB	Mar	CL	1	269/631	-	74/129
			May	CL	1	328/482	-	118/183
			Jun	CL	1	200/290		
	3O	OTB	Jan	CL	1	501/295	-	335/398
			Feb	CL	4	1424/1168		
			Mar	CL	1	317/119		
			Nov	CL	1	305/530	-	48/67
	3Ps	OTB	Mar	CL	1	42/67	-	26/46
			Apr	CL	3	1126/1050	-	148/197
	4R	OTB	Feb	CL	2	286/403	-	253/350
			Mar	CL	3	532/919		
	4S	OTB	Apr	CL	1	322/413	-	51/65
Poland	3K	OTB	Mar	CC	2	858/632	2	126/88
USSR	3K	OTB	Oct	CC	12	563/486		
USA	5Y	OTB	Feb	CL	-	108		
			Apr	CL	-	64		
			Jun	CL	-	39		
			Jul	CL	-	126		
			Aug	CL	-	126		
			Sep	CL	-	42		

Table 9. Yellowtail flounder length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M)	4Vs	OTB	Jun	CL	3	300/300	3	39/60
			Jul	CL	1	80/120	3	43/61
			Aug	CL	1	82/118		
			Sep	CL	1	50/150		
Canada (N)	3L	OTB	May	CL	3	898/806	-	113/139
			Jun	CL	2	1343/1275		
			Jul	CL	2	500/382	-	147/179
			Aug	CL	2	740/730		
			Sep	CL	1	396/300		
	3N	OTB	Mar	CL	1	176/229	-	39/51
			Apr	CL	2	547/564	-	209/272
			May	CL	2	625/644		
			Jun	CL	1	287/196		
			Jul	CL	1	73/260	-	122/162
			Aug	CL	2	520/847		
			Sep	CL	1	155/274		
			Oct	CL	3	431/828	-	241/303
			Nov	CL	7	1472/1713		
	3O	OTB	Feb	CL	1	346/345	-	40/54
			Apr	CL	2	475/707	-	61/84
			Aug	CL	1	236/156	-	57/69
			Sep	CL	1	215/182		
			Nov	CL	1	124/176	-	25/36

Table 9. Yellowtail flounder (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
CANADA (N) (cont'd)	3Ps	OTB	Mar	CL	1	412/526	-	113/142
			Apr	CL	1	248/278	-	39/48
			Nov	CL	1	99/264	-	38/49
Spain	3N	PTB	Mar	CC	3	370/598		
			Apr	CC	1	103/165		
			Jun	CC	1	29/212		
			Jul	CC	2	155/305		
	3O	PTB	Mar	CC	1	118/96		
			Apr	CC	1	92/69		
			Jun	CC	1	178/141		
USA	5Ze	OTB	Jan	CL	2	46/113		
			Feb	CL	1	17/77	5	105/126
			Mar	CL	2	43/127		
			Apr	CL	2	61/127		
			May	CL	3	145/214	12	186/301
			Jun	CL	7	175/583		
			Jul	CL	8	848/330		
			Aug	CL	5	122/380	23	515/524
			Sep	CL	9	439/546		
			Oct	CL	9	427/566		
			Nov	CL	4	199/189	17	359/425
			Dec	CL	4	237/230		
	5Zw	OTB	Jan	CL	1	33/80		
			Feb	CL	5	360/269	10	250/253
			Mar	CL	5	207/197		
			Apr	CL	2	110/137		
			May	CL	1	129/122	5	94/125
			Jun	CL	1	97/66		
			Jul	CL	-	117/45	3	79/78
			Sep	CL	2	56/114		
			Oct	CL	2	80/125	8	186/200
			Dec	CL	6	285/360		

Table 10. Greenland halibut length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (N)	2H	OTB	Sep	CL	1	58/92	-	57/91
	2J	OTB	Sep	CL	1	23/72	-	14/46
		GN	Sep	CL	1	148/193	-	297/395
			Oct	CL	1	723/875		
	3K	OTB	Feb	CL	1	137/213	-	317/453
			Mar	CL	4	848/1096		
			Apr	CL	3	294/358	-	136/163
			Sep	CL	1	44/110	-	37/99
			Oct	CL	1	325/401	-	69/88
		GN	Jul	CL	9	838/1224	-	196/263
			Sep	CL	7	961/1347	-	277/344
	3L	GN	Jun	CL	2	278/362		
			Jul	CL	2	182/307	-	171/174
			Aug	CL	1	127/199		
			Sep	CL	4	650/813	-	258/282
			Oct	CL	1	122/188		
	4R	OTB	Mar	CL	1	29/18	-	28/18

Table 10. Greenland halibut (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
German Dem. Rep.	2G	OTB	Jul	CC	1	127/83	1	127/83
	2H	OTB	Jun	CC	1	261/187	2	233/156
			Sep	CC	1	163/107	1	163/107
			Dec	CC	1	103/42	1	103/42
Poland	2J	OTB	Mar	CC	1	467/385	3	220/285[1]
	3K	OTB	Mar	CC	2	784/1033	3	220/285[1]
USSR	0B	OTB	Aug	CC	19	4225/2020	-	-
			Sep	CC	6	1405/830		
			Oct	CC	4	835/367	-	429/467
			Nov	CC	32	4937/2435		
	1C	OTB	Aug	CC	-	477/198	-	-
			Sep	CC	18	4298/2211		
	1D	OTB	Aug	CC	-	482/252	-	-
			Sep	CC	-	1092/466		
	2J	OTB	Feb	CC	8	823/1159	-	-

[1] Same age-length key used for OTB in Div. 2J and 3K.

Table 11. Winter flounder length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M)	4T	OTB	Jun	CL	4	261/388	4	65/74
	4X	OTB	Sep	CL	4	387/415	4	69/87
USA	5Y	OTB	Jan	CL	-	195		
			Mar	CL	-	165		
	5Ze	OTB	Jan	CL	-	64		
			Feb	CL	-	216		
			Mar	CL	-	585		
			Apr	CL	-	334		
			May	CL	-	752		
			Jul	CL	-	211		
			Aug	CL	-	244		
			Sep	CL	-	840		
			Oct	CL	-	395		
			Nov	CL	-	292		
			Dec	CL	-	147		
	5Zw	OTB	Sep	CL	-	300		
			Dec	CL	-	59		
	6A	OTB	May	CL	-	346		
			Jun	CL	-	750		
			Jul	CL	-	105		
			Nov	CL	-	134		
			Dec	CL	-	67		

Table 12. Summer flounder length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA	5Ze	OTB	Jan	CL	-	297		
			Feb	CL	-	519		

Table 12. Summer flounder (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA (cont'd)	5Ze	OTB	Mar	CL	-	688		
			Apr	CL	-	521		
			Oct	CL	-	141		
	5Zw	OTB	Jun	CL	-	275		
			Oct	CL	-	344		
	6A	OTB	Jan	CL	-	262		
			Feb	CL	-	165		
			Mar	CL	-	308		
			May	CL	-	276		
			Oct	CL	-	43		

Table 13. Greenland cod length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Denmark (G)	1B	FPN	Jun	CL	2	633	1	156
	1D	FPN	May	CL	3	1434	-	-
		GN	Oct	RC	5	71	-	-

Table 14. Polar cod length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Portugal	1B	GN	Jul	CC	5	252		
	1C	GN	Jun	CC	4	240		
			Jul	CC	5	169		
	1D	GN	Jun	CC	2	127		

Table 15. Roundnose grenadier length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
German Dem. Rep.	2H	OTB	Dec	CC	1	58/42		
USSR	3K	OTB	Jan	CC	9	2162/1828		

Table 16. Scup length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA	5Zw	OTB	Oct	CL	4	414	3	74
			Nov	CL	1	100		
		FPN	May	CL	3	299	4	96
			Jun	CL	1	100		

Table 16. Scup (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA (cont'd)	6A	OTB	Apr	CL	2	275		
			May	CL	1	157	5	107
			Jun	CL	2	135		
			Aug	CL	1	57	1	27
			Oct	CL	1	65	3	84
			Nov	CL	2	192		

Table 17. White hake length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M)	3Ps	LL	Feb	CL	1	150		
			Mar	CL	1	168		
	4R	OTB	Feb	CL	2	402		
	4T	OTB	Jun	CL	1	200		
		SN	Jul	CL	2	400		
		GN	Aug	CC	1	200		
	4Vn	SN	Jun	CL	1	164		
			Aug	CL	1	200		
			Sep	CL	1	200		
	4Vs	OTB	Mar	CL	1	204		
	4X	LL	May	CL	1	169		

Table 18. Atlantic herring length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M)	4Vn	OTM	May	CL	3	491	3	266
		PS	May	CL	1	159	1	57
			Nov	CL	38	6044	56	844
			Dec	CL	21	2990		
		FPN	Jun	CL	1	252	1	41
	4W	OTM	Jan	CL	1	306	1	48
		PS	Jan	CL	49	8981	48	2913
			Apr	CL	7	1210	16	835
			May	CL	12	1586		
			Nov	CL	2	372	5	136
			Dec	CL	3	503		
	4X	PS	Jan	CL	1	273		
			Feb	CL	22	4813	30	1065
			Mar	CL	8	2239		
			May	CL	4	935	86	2902
			Jun	CL	87	18305		
			Jul	CL	40	8584		
			Aug	CL	46	9749	113	3315
			Sep	CL	33	7797		
			Oct	CL	9	2569	9	271
			Dec	CL	2	263		

Table 18. Atlantic herring (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M) (cont'd)	4X	GN	May	CL	1	128	16	571
			Jun	CL	16	2649		
			Jul	CL	13	1830		
			Aug	CL	15	2950	34	1052
			Sep	CL	7	1191		
		FPN	May	CL	6	787	8	315
			Jun	CL	5	724		
			Jul	CL	5	796	3	106
		FWR	May	CL	9	1949	49	2210
			Jun	CL	39	8117		
			Jul	CL	36	5638		
			Aug	CL	79	14165	138	3104
			Sep	CL	24	6068		
			Oct	CL	18	4971		
			Nov	CL	28	7677	52	1192
			Dec	CL	9	2011		
	5Y	PS	May	CL	1	132	1	28
	5Z	PS	Sep	CL	1	841	1	32
Fed. Rep. Germany	5Ze	OTB	Oct	RC	18	93		
Poland	5Ze	OTB	Feb	RC	1	1056	1	130
USA	5Yn	MIS	Jan	CC	1	67		
			Feb	CC	3	193	7	140
			Mar	CC	6	599		
			May	CC	7	886	30	701
			Jun	CC	33	3855		
			Jul	CC	42	4701		
			Aug	CC	89	5073	185	2205
			Sep	CC	54	4345		
			Oct	CC	52	4376		
			Nov	CC	18	1394	71	853
			Dec	CC	1	97		
	5Ys	MIS	Jan	CC	16	1382		
			Feb	CC	8	739	21	688
			Mar	CC	14	831		
			Apr	CC	7	348	6	190
			May	CC	3	212		
			Jul	CC	2	83		
			Aug	CC	10	497	9	191
			Sep	CC	6	100		
			Nov	CC	2	233	1	92

Table 19. Atlantic mackerel length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Bulgaria	5Zw	OTM	Jan	CC	5	697		
	6A	OTM	Jan	CC	10	2163		
			Feb	CC	1	200		
	6B	OTM	Jan	CC	2	400		
			Feb	CC	11	2461		
	6C	OTM	Jan	CC	3	600		

Table 19. Atlantic mackerel (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M)	4T	PS	May	CC	1	131	1	34
			Jul	CC	10	1061	13	569
		GN	Jun	CC	12	1226	11	296
			Aug	CC	2	204	2	58
		LHP	Aug	CC	7	717	7	147
	4Vn	FPN	Jun	CC	5	731	6	284
			Jul	CC	2	330	2	75
	4X	OTM	May	CC	2	206	1	33
		GN	May	CC	4	427	14	423
			Jun	CC	12	1431		
			Jul	CC	7	875	6	201
		FPN	May	CC	9	992	19	690
			Jun	CC	17	2547		
			Jul	CC	7	1570	9	448
			Aug	CC	1	319		
Canada (N)	3K	PS	Nov	CL	1	50	-	50
		FPN	Jul	CL	1	15	-	90
			Aug	CL	2	75		
	3L	SB	Nov	CL	1	50	-	50
		PS	Sep	CL	9	445	-	445
			Oct	CL	1	50	-	148
			Nov	CL	2	98		
		FPN	Sep	CL	6	300	-	300
	4R	GN	Jul	CL	2	90	-	89
	4T	PS	May	CL	1	50	-	50
Fed. Rep. Germany	5Y	OTB	Oct	RC	3	22		
	5Ze	OTB	Oct	RC	12	51		
German Dem. Rep.	6A	OTM	Jan	CC	3	763	6	591
			Feb	CC	3	1087		
	6B	OTM	Jan	CC	2	458	9	870
			Feb	CC	7	1568		
Poland	6A	OTM	Jan	CC	2	417	4	365
			Feb	CC	2	569		
	6B	OTM	Jan	CC	2	473	17	1579
			Feb	CC	21	5169		
	6C	OTB	Jan	CC	2	364	2	165
USSR	4W	OTB	Jul	CC	13	2526		
			Aug	CC	3	600		
		OTM	Jun	CC	4	792		
	5Zw	OTM	Jan	CC	6	1200		
	6A	OTM	Jan	CC	9	1800		
USA	5Y	FPN	Jun	CL	1	100		
			Jul	CL	2	200		
			Aug	CL	2	200		
	5Ze	OTB	May	CL	1	105		
	5Zw	OTB	Jan	CL	2	426		
			Apr	CL	1	134		
			May	CL	1	124		
			Sep	CL	1	114		

Table 19. Atlantic mackerel (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA (cont'd)	5Zw	PTM	May	CL	1	100		
	6A	OTB	Apr	CL	1	174		

Table 20. Atlantic butterfish length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Japan	6A	OTB	Mar	CC	3	91		
	6B	OTM	Nov	CC	1	136		
			Dec	CC	10	1110		
	6C	OTM	Nov	CC	1	163		
			Dec	CC	1	177		
USA	5Zw	OTB	Jan	CL	5	588		
			Oct	CL	2	211		
			Nov	CL	1	100		
	6A	OTB	Sep	CL	1	38		

Table 21. Atlantic argentine length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USSR	4W	OTB	Aug	CC	6	1200	8	392
			Sep	CC	12	2375		

Table 22. Capelin length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Bulgaria	4W	OTM	May	CC	1	200		
			Jun	CC	1	200		
Canada (N)	2J	OTM	Oct	RC	2	53/47	2	53/47
		DN	Jul	RC	1	49/-	1	49/-
	3K	OTM	Oct	RC	6	118/182	16	316/485
			Nov	RC	10	197/303		
		SB	Jun	RC	1	48/-	1	48/-
			Jul	RC	2	78/11	2	78/11
		FPN	May	RC	1	39/11	1	39/11
		CN	Jun	RC	8	394/-	8	394/-
		DN	Jun	RC	7	347/-	7	347/-
	3L	OTB	Feb	RC	2	38/62	3	72/84
			Mar	RC	1	34/25		
			Apr	RC	4	95/119	4	95/119

Table 22. Capelin (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age Samples No.	Age Samples No. aged
Canada (N) (cont'd)	3L	OTM	Mar	RC	2	40/74	2	40/74
			Apr	RC	2	52/48		
			May	RC	2	55/45	5	109/98
			Jun	RC	1	2/5		
		PS	May	RC	1	4/46	11	293/257
			Jun	RC	10	289/211		
		FPN	Apr	RC	2	84/16	2	84/16
			Jul	RC	4	159/41	4	159/41
		CN	Jul	RC	8	368/32	8	368/32
		DN	Jun	RC	34	1594/106	34	1594/106
			Jul	RC	6	256/44	6	256/44
	3N	OTB	May	RC	1	11/8	3	63/39
			Jun	RC	2	51/31		
		OTM	Jun	RC	16	144/669	16	144/669
		PS	Jun	RC	1	7/32	1	7/32
	3O	OTB	Jun	RC	2	53/62	2	53/62
	3P	OTB	Apr	RC	4	172/129	4	172/129
		OTM	Feb	RC	9	148/212	9	148/212
		SB	Jun	RC	14	627/39	14	627/39
	4R	OTB	Sep	RC	1	8/18	1	8/18
		PS	May	RC	2	58/42	2	58/42
		CN	Jun	RC	13	602/47	13	602/47
		DN	Jun	RC	22	1073/25	22	1073/25
	4S	OTB	Sep	RC	2	34/66	2	34/66
German Dem. Rep.	3K	OTM	Dec	CC	1	276/255	1	91/65
Japan	2J	OTM	Sep	CC	2	-/399		
			Oct	CC	4	45/643		
	3K	OTM	Oct	CC	8	404/1609		
	3L	OTM	Jul	CC	1	5/-		
	3N	OTM	Jun	CC	3	88/229		
			Jul	CC	1	104		
Poland	3K	OTM	Dec	CL	2	333/985		
Norway	3N	PS	Jun	CC	11	255/242	10	238/209
			Jul	CC	1	44/6	1	43/5

Table 23. Long-finned squid (*Loligo*) length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Japan	6A	OTB	Mar	CC	3	87		
	6B	OTB	Dec	CC	11	2248		
	6C	OTB	Nov	CC	6	685		

Table 23. Long-finned squid (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA	5Ze	OTB	Apr	CL	1	102		
	5Zw	OTB	Jan	CL	1	98		
			Mar	CL	1	100		
			Apr	CL	1	99		
			May	CL	7	667		
			Jun	CL	3	352		
			Jul	CL	2	201		
			Aug	CL	1	100		
			Sep	CL	1	130		
			Oct	CL	5	439		
			Nov	CL	9	331		
	6A	OTB	Apr	CL	1	100		

Table 24. Short-finned squid (*Illex*) length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Bulgaria	4W	OTM	Jun	CC	2	422		
			Jul	CC	1	100		
Canada (N)	3L	LHP	Jun	CL	1	213/196		
			Jul	CL	3	1437/414		
			Aug	CL	3	990/413		
			Sep	CL	1	192/141		
			Oct	CL	1	78/336		
Cuba	4W	OTB	Jul	RC	3	388		
France (SP)	3Ps	OTB	Nov	RC	21	9634/9556		
Italy	3L	OTB	Jun	CC	1	60		
			Jul	CC	1	60		
			Aug	CC	1	60		
			Sep	CC	1	60		
			Nov	CC	1	60		
			Dec	CC	1	60		
Japan	4Vs	OTB	Aug	RC	5	1412		
			Sep	RC	6	1545		
	4W	OTB	Jul	CC	22	5418		
			Aug	CC	56	13017		
			Sep	CC	4	908		
	4X	OTB	Jul	CC	2	506		
			Aug	CC	5	571		
	6A	OTB	Aug	CC	1	5		
	6B	OTB	Jul	CC	7	326		
			Aug	CC	7	490		
			Sep	CC	4	189		
Poland	4W	OTM	Jul	CC	5	1292/962		
			Aug	CC	9	2371/1732		
	5Z	OTB	Sep	RC	47	4130		
			Oct	RC	3	377		

Table 24. Short-finned squid (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USSR	4W	OTB	Jul	CC	57	11466		
			Aug	CC	34	6851		
			Nov	CC	9	1808		
		OTM	Jun	CC	137	27320		
			Jul	CC	69	13800		
			Aug	CC	14	2800		
USA	5Y	OTB	Aug	CL	2	105		
			Sep	CL	1	53		
			Oct	CL	3	154		
			Nov	CL	1	51		
	5Ze	OTB	Aug	CL	2	148		
			Sep	CL	2	103		
			Oct	CL	1	52		
			Nov	CL	1	50		
	5Zw	OTB	Jun	CL	3	95		
			Jul	CL	4	230		
			Aug	CL	2	89		
	6A	OTB	Jul	CL	6	170		

Table 25. Sea scallops length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA	5Ze	DRB	Jan	CL	5	1479		
			Feb	CL	2	734	-	-
			Mar	CL	5	1820		
			Apr	CL	5	1828	-	-
			Aug	CL	8	2277		
			Sep	CL	3	509	11	325
			Oct	CL	9	1963		
			Nov	CL	3	892	13	392
			Dec	CL	3	793		
	6A	DRB	Feb	CL	1	346		
			Mar	CL	3	1340	-	-
			Apr	CL	2	614		
			May	CL	11	4583		
			Jun	CL	8	3207	9	362
			Jul	CL	2	573		
			Aug	CL	2	465	4	45
			Sep	CL	3	568		
			Oct	CL	4	808	2	113

Table 26. Northern deepwater prawn (*Pandalus borealis*) length and age sampling data for 1977.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
France (SP)	0A	OTB	Oct	RC	3	2279		

PART 4

Sampling Data from Research Vessel Surveys, 1977

The following table contains a list of research samples reported by certain countries for 1977. All of these data were reported as research vessel samples, as indicated by the abbreviation "RC" under the heading "Type of Sample". The samples were reported as taken from catches retained in small-meshed codends or codends with small-mesh liners. In the case of some species (e.g. herring and mackerel) which are normally caught commercially with small-meshed trawls, most of the research samples are listed in the previous section. The abbreviations for gears are defined on page 19 of this volume.

Table 27. Research sampling data for 1977.

SPECIES Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	 No. meas.	Age samples No.	 No. aged
ATLANTIC COD								
Cuba	4VWX	OTB	Jul	RC	2	54		
Denmark (G)	1B	FPN	Jul	RC	1	2150	1	313
	1D	OTB	Mar	RC	1	581	1	274
			Apr	RC	1	322	1	204
	1E	OTB	Apr	RC	1	41	1	41
			Oct	RC	1	80	1	80
France (SP)	2J	OTB	Jan	RC	6	2571	1	401
	3K	OTB	Jan	RC	4	132	1	46
	3L	OTB	Feb	RC	10	2336	1	499
	3Pn	OTB	Jan	RC	11	251	1	251
	3Ps	OTB	Feb	RC	2	92	2	603
			Mar	RC	2	845		
			Nov	RC	12	3737	1	558
	4R	OTB	Jan	RC	22	9159	1	550
Fed. Rep. Germany	1D	OTB	Dec	RC	3	777	3	153
	1E	OTB	Dec	RC	1	86	1	44
	1F	OTB	Dec	RC	1	534	-	101
	2J	OTB	Nov	RC	34	1414	32	538
			Dec	RC	32	1473		
	4X	OTB	Oct	RC	2	12	-	-
	5Y	OTB	Oct	RC	7	159	-	-
	5Ze	OTB	Mar	RC	8	62	-	-
			Oct	RC	41	2401	-	-
HADDOCK								
Cuba	4VWX	OTB	Jul	RC	3	207		
Fed. Rep. Germany	4X	OTB	Oct	RC	4	1049		
	5Y	OTB	Oct	RC	7	882		
	5Ze	OTB	Mar	RC	8	86		
			Oct	RC	32	4573		

Table 27. Research (continued)

SPECIES Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
BEAKED REDFISH (*Sebastes mentella*)								
Fed. Red. Germany	2J	OTB	Dec	RC	29	2576/2315		
ATLANTIC REDFISH (*Sebastes* spp.)								
Cuba	4VWX	OTB	Jul	RC	2	202		
Denmark (G)	1A	OTB	May	RC	6	1951		
			Aug	RC	4	1678		
	1B	OTB	Apr	RC	2	971		
			May	RC	5	2967		
			Jun	RC	20	2607		
			Jul	RC	8	1424		
			Aug	RC	4	1818		
		OTM	May	RC	1	126		
	1C	OTB	Feb	RC	1	176		
			Apr	RC	1	1000		
	1D	OTB	Jan	RC	2	1353		
			Mar	RC	1	553		
			Apr	RC	3	203		
	1E	OTB	Oct	RC	1	234		
France (SP)	3K	OTB	Jan	RC	2	481		
	3Pn	OTB	Feb	RC	10	2546		
	3Ps	OTB	Feb	RC	2	1005		
			Mar	RC	11	1652		
			Nov	RC	16	2165/1820		
	4R	OTB	Jan	RC	5	865		
SILVER HAKE								
Fed. Rep. Germany	5Y	OTB	Oct	RC	7	431		
	5Ze	OTB	Mar	RC	9	1297		
			Oct	RC	50	4120		
POLLOCK								
Fed. Rep. Germany	5Y	OTB	Oct	RC	6	209		
	5Ze	OTB	Mar	RC	9	49		
			Oct	RC	18	454		
AMERICAN PLAICE								
Denmark (G)	1A	OTB	Aug	RC	4	171		
	1B	OTB	Apr	RC	1	62		
			May	RC	9	708		
			Jun	RC	30	225		
			Jul	RC	7	1307		
			Aug	RC	3	50		
	1C	OTB	Feb	RC	1	1743		
			Apr	RC	1	399		
	1D	OTB	Jan	RC	2	1235		
			Mar	RC	1	1770		
			Apr	RC	4	629		
	1E	OTB	Oct	RC	1	72		
Fed. Rep. Germany	2J	OTB	Nov	RC	22	659/622		
France (SP)	3K	OTB	Feb	RC	1	438	-	-
	3Ps	OTB	Mar	RC	38	735/747	1	145/151
			Nov	RC	39	5342/5834	-	-

Table 27. Research (continued)

SPECIES Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
WITCH FLOUNDER								
France (SP)	3Ps	OTB	Nov	RC	19	468/457		
GREENLAND HALIBUT								
Denmark (G)	1A	OTB	Apr	RC	2	700		
			May	RC	4	919		
			Aug	RC	4	1899		
	1B	OTB	Apr	RC	2	664		
			May	RC	10	486		
			Jun	RC	33	539		
			Jul	RC	8	869		
			Aug	RC	4	332		
	1C	OTB	Feb	RC	1	99		
			Apr	RC	1	124		
	1D	OTB	Jan	RC	2	287		
			Mar	RC	1	232		
			Apr	RC	3	76		
			Dec	RC	1	50		
	1E	OTB	Apr	RC	1	64		
			Oct	RC	2	92		
Fed. Rep. Germany	2J	OTB	Nov	RC	27	523/537		
France (SP)	0B	OTB	Oct	RC	25	2483/2178		
GREENLAND COD								
Denmark (G)	1D	OTB	Jan	RC	2	66		
			Apr	RC	4	86		
	1E	OTB	Apr	RC	1	96		
STRIPED WOLFFISH								
Denmark (G)	1B	OTB	May	RC	5	108		
ATLANTIC HERRING								
German Dem. Rep.	5Ze	OTB	Mar	RC	12	47	-	-
			Apr	RC	2	52	1	45
	5Zw	OTB	Mar	RC	8	598	4	160
ATLANTIC MACKEREL								
German Dem. Rep.	5Ze	OTB	Mar	RC	8	134	1	78
	5Zw	OTB	Mar	RC	6	49	1	39
ATLANTIC ARGENTINE								
Cuba	4VWX	OTB	Jul	RC	2	272		
CAPELIN								
USSR	2J	OTM	Oct	RC	-	582/1186	3	110/193
			Nov	RC	-	272/505		
	3K	OTM	Oct	RC	-	3478/5489	9	349/552
			Nov	RC	-	1992/4331		