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FOR THE

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 1978; Part 3 contains, in a series of tables arranged by species, lists of available 1978 sampling data pertaining to commercial fisheries; and Part 4 contains a list of research sampling data for 1978.

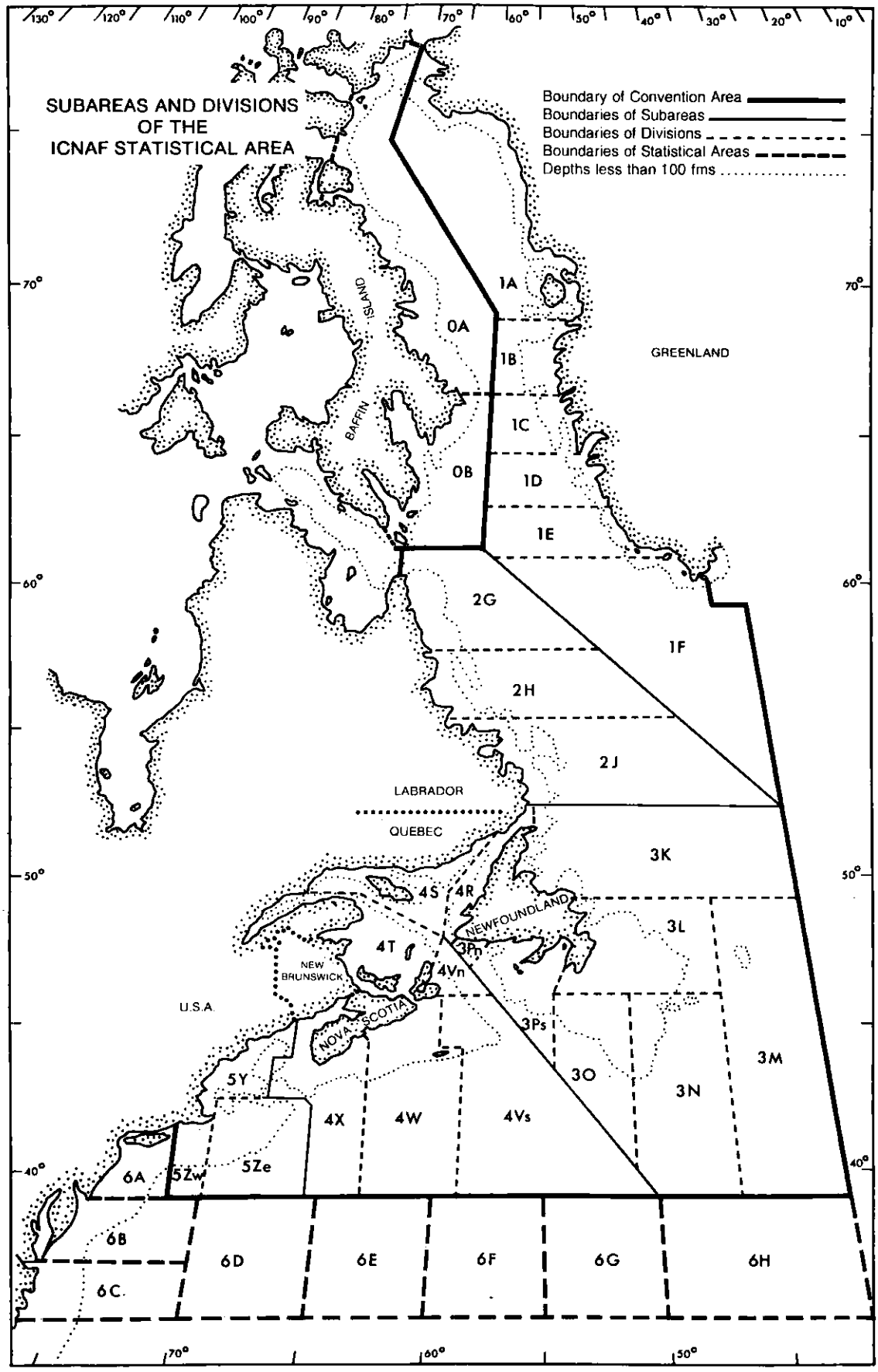
All available commercially-oriented sampling data for 1968 onwards have been computerized to provide for the rapid retrieval of data on computer printouts to meet specific requests. Copies of length frequencies, age-length keys and computed age frequencies (where applicable) will be forwarded upon request 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.

This is the last volume of Sampling Yearbook to be issued under the aegis of ICNAF.

December 31, 1981

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
130°
120°
110°
100°
90°
80°
70°
60°
50°
40°
30°
20°
10°
70°
60°
50°
40°
BAFFIN ISLAND
GREENLAND
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
70°
60°
50°

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 ☐ Total length ☐ Mantle ☐ 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, 1978

1. 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 1978.

Country	Species	Divisions
Bulgaria	Silver hake	- 4W
	Squid illex	- 4VWX
Canada (M)	Atlantic cod	- 2J, 3K, 3O, 3Ps, 4R, 4S, 4T, 4Vn, 4Vs, 4W, 4X, 5Ze
	Haddock	- 3O, 3Ps, 4Vs, 4W, 4X, 5Ze
	Atlantic redfish	- 2J, 3K, 3O, 3Pn, 3Ps, 4R, 4S, 4T, 4Vn, 4Vs, 4W, 4X
	Pollock	- 3Ps, 4Vs, 4W, 4X, 5Ze
	American plaice	- 2J, 3K, 3O, 3Ps, 4R, 4S, 4T, 4Vn, 4Vs, 4X
	Witch flounder	- 3K, 3Ps, 4R, 4S, 4Vn, 4Vs, 4W, 4X
	Yellowtail flounder	- 3L, 3O, 4Vs, 5Ze
	Cusk	- 4X
	White hake	- 4S, 4X
	Atlantic herring	- 4Vn, 4W, 4X
	Atlantic mackerel	- 4T, 4Vn, 4W, 4X
	Squid illex	- 4X
Canada (N)	Atlantic cod	- 2J, 3K, 3L, 3N, 3O, 3Pn, 3Ps, 4R, 4Vn
	Haddock	- 3N, 3O, 3Ps, 4W
	Atlantic redfish	- 2J, 3K, 3L, 3M, 3O, 3Ps, 4R, 4Vs
	American plaice	- 3K, 3L, 3N, 3O, 3Ps, 4R
	Witch flounder	- 3K, 3L, 3N, 3O, 3Ps, 4R
	Yellowtail flounder	- 3L, 3N, 3O, 3Ps
	Greenland halibut	- 3K, 3L, 4R
	Atlantic mackerel	- 3K, 3L, 4R
	Squid illex	- 3K, 3L, 3Ps
Cuba	Silver hake	- 4VWX
	Capelin	- 3N
	Squid illex	- 4VWX
Denmark (G)	Atlantic cod	- 1C, 1D, 1E, 1F
	American plaice	- 1A, 1D
	Greenland cod	- 1D
France (M)	Atlantic cod	- 2J, 3K, 3L, 3M, 3Pn, 3Ps, 4R, 4Vn
	Squid illex	- 4W
France (SP)	Atlantic cod	- 3L, 3Ps, 4R, 4Vn
	Atlantic redfish	- 3Ps, 4R
	American plaice	- 3O
	Yellowtail flounder	- 3O
	Squid illex	- 3Ps
Fed. Rep. Germany	Atlantic cod	- 1C, 1D, 1E, 1F, EG, 2H, 2J, 3K
German Dem. Rep.	Atlantic cod	- 2J, 3K
	Greenland halibut	- 2J, 3K
	Capelin	- 3L
Japan	Silver hake	- 4W, 5Ze, 6C
	Atlantic butterfish	- 5Zw, 6A, 6C
	Atlantic argentines	- 4Vs, 4X
	Capelin	- 3K, 3L, 3N, 3O
	Squid loligo	- 5Ze, 5Zw, 6A, 6C
	Squid illex	- 3O, 4Vs, 4W, 4X, 5Ze, 5Zw, 6B, 6C

Country	Species	Division
Poland	Atlantic cod	- 2J, 3K, 3M
	Witch flounder	- 2J, 3K
	Greenland halibut	- 2J, 3K
	Capelin	- 3L
	Squid illex	- 3N, 4W
Portugal	Atlantic cod	- 2J, 3K, 3L, 3M
Romania	Silver hake	- 6B
	Roundnose grenadier	- 3K
	Atlantic mackerel	- 4W, 6B
	Atlantic butterfish	- 5Zw, 6A
	Capelin	- 2J, 3K
	Squid loligo	- 5Zw, 6B
	Squid illex	- 4W, 5Zw, 6B
USSR	Atlantic cod	- 2J, 3K, 3M, 3N
	Atlantic redfish	- 2J, 3K, 3L, 3M, 3N, 4W
	Silver hake	- 4Vs, 4W, 5Ze, 5Zw, 6A
	Red hake	- 5Ze, 5Zw, 6A
	American plaice	- 2J, 3K, 3N
	Witch flounder	- 2J, 3K, 3L
	Greenland halibut	- 2J, 3K
	Roundnose grenadier	- 2G, 3K, 3M
	Atlantic mackerel	- 4W
	Atlantic argentines	- 4Vs, 4W, 4X
	Capelin	- 2J, 3K, 3L
UK	Atlantic cod	- 2J, 3K, 3M
	Atlantic redfish	- 2J, 3M
	Greenland halibut	- 2J
USA	Atlantic cod	- 4X, 5Y, 5Ze, 5Zw
	Haddock	- 5Y, 5Ze
	Atlantic redfish	- 4X, 5Y, 5Ze
	Silver hake	- 5Y, 5Ze, 5Zw
	Red hake	- 5Zw, 6A
	Pollock	- 5Y, 5Ze
	American plaice	- 5Y, 5Ze
	Witch flounder	- 5Y
	Yellowtail flounder	- 5Ze, 5Zw
	Winter flounder	- 5Y, 5Ze, 5Zw, 6A
	Summer flounder	- 5Ze, 5Zw, 6A, 6C
	Windowpane flounder	- 5Z
	Atlantic herring	- 5Y
	Atlantic mackerel	- 5Y, 5Zw
	Squid loligo	- 5Zw, 6A
	Squid illex	- 5Ze
	Sea scallops	- 5Ze, 6

2. 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 26). 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	Divisions
Denmark(G)	Atlantic cod	- 1D, 1E
	Atlantic redfish	- 1A, 1B, 1C, 1D
	American plaice	- 1B, 1C, 1D, 1E
	Greenland halibut	- 1A, 1B, 1D

Country	Species	Division
Denmark(G) (cont'd)	Greenland cod	- 1D, 1E
	Polar cod	- 1A
	Spotted wolffish	- 1A
	Striped wolffish	- 1A
France(SP)	Atlantic cod	- 2J, 3K, 3L, 3Pn, 3Ps, 4R
	Atlantic redfish	- 2J, 3K, 3L, 3Pn, 3Ps, 4R
	American plaice	- 3Ps
	Witch flounder	- 3Ps
Fed. Rep. Germany	Atlantic cod	- 1C, 1D, 1E, 1F, 2J
German Dem. Rep.	Atlantic cod	- 2H, 2J, 3K
	Redfish-*Mentella*	- 0B, 2G, 2H, 2J, 3K
	Greenland halibut	- 0B, 2G, 2H, 2J, 3K
	Roundnose grenadier	- 0B, 2G, 2H, 2J, 3K
USSR	Atlantic redfish	- 3M

PART 3

List of Sampling Data for Commercial Fisheries, 1978

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 25 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 25 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 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M)	2J	OTB	Mar	CL	1	365	1	50
	3K	OTB	Mar	CL	4	1240	4	212
			May	CL	1	352	1	58
	3O	OTB	Apr	CL	2	630	4	187
			May	CL	2	784		
			Aug	CL	3	767	5	238
			Sep	CL	2	674		
			Oct	CL	1	300	1	30
	3Ps	OTB	Jan	CL	1	327	1	36
			Apr	CL	1	306	1	56
			Aug	CL	1	324	1	25
	4R	OTB	Jan	CL	5	1531	8	383
			Feb	CL	2	595		
			Mar	CL	1	321		
			Apr	CL	1	302	3	141
			May	CL	2	400		
	4S	OTB	Jan	CL	2	807	6	344
			Feb	CL	4	1356		
			May	CL	1	200	4	140
			Jun	CL	3	600		
			Oct	CL	1	131	1	32
	4T	OTB	May	CL	7	1400	12	407
			Jun	CL	5	1012		
			Oct	CL	1	200	2	66
			Nov	CL	1	231		
		SN	May	CL	4	800	7	261
			Jun	CL	3	599		
			Jul	CL	9	1810	17	582
			Aug	CL	7	1400		
			Sep	CL	1	200		
		GN	Jun	CL	2	380	2	76
			Aug	CL	1	200	1	25
		LL	Jun	CL	6	1200	6	219
			Jul	CL	2	400	3	91
			Aug	CL	1	201		
		LHP	Jun	CL	1	200	1	21
			Jul	CL	1	200	2	71
			Aug	CL	1	199		
	4Vn	OTB	Jan	CL	6	1731	12	497
			Feb	CL	6	2124		
			Jul	CL	1	200	1	34
		LL	Jun	CL	3	603	3	153
			Jul	CL	2	478	7	344
			Aug	CL	5	1559		
	4Vs	OTB	Feb	CL	1	284	6	320
			Mar	CL	5	1784		
			Apr	CL	2	618	3	153
			May	CL	1	412		
			Jul	CL	1	300	2	85
			Sep	CL	1	205		
			Oct	CL	1	360	3	139
			Nov	CL	2	592		
	4W	OTB	Mar	CL	2	553	2	112
			Jul	CL	1	342	4	182
			Sep	CL	3	952		
			Oct	CL	1	953	2	72
			Nov	CL	2	671		

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)	4W	SN	Sep	CL	2	516	2	58
		LL	Mar	CL	1	299	1	54
			Jun	CL	1	262	1	50
			Jul	CL	2	353	2	94
		LHP	Jul	CL	1	308	2	98
			Sep	CL	1	288		
	4X	OTB	Jan	CL	1	313		
			Feb	CL	1	275	6	326
			Mar	CL	4	1297		
			Jul	CL	2	615	3	129
			Aug	CL	1	304		
		GN	Aug	CL	1	238	1	46
		LL	Feb	CL	5	1345	8	437
			Mar	CL	3	886		
			Apr	CL	1	232	1	53
	5Ze	OTB	Feb	CL	5	1470	6	386
			Mar	CL	2	618		
			May	CL	2	512	7	340
			Jun	CL	5	1397		
			Jul	CL	8	2300	8	338
			Oct	CL	5	1371	7	350
			Nov	CL	2	359		
Canada (N)	2J	OTB	Jan	CL	1	1048	-	426
			Feb	CL	7	3893		
		GN	Aug	CL	24	3327	-	959[1]
		LL	Aug	CL	3	243	-	959[1]
		LHP	Aug	CL	2	271	-	959[1]
		FPN	Jul	CL	12	2167	-	959[1]
			Aug	CL	9	2730		
	3K	OTB	Jan	CL	1	799		
			Feb	CL	4	1563	-	355
			Mar	CL	4	2222		
			Apr	CL	2	741		
			May	CL	6	1755	-	387
			Jun	CL	1	315		
		GN	Jul	CL	17	2289	-	1123[2]
			Sep	CL	5	1061	-	407[3]
		LHP	Sep	CL	11	4026	-	407[3]
		FPN	Jun	CL	3	799	-	1123[2]
			Jul	CL	24	8765		
	3L	OTB	Mar	CL	2	821	-	157
			Apr	CL	6	1946		
			May	CL	3	1272	-	520
			Jun	CL	2	968		
			Jul	CL	1	315		
			Aug	CL	4	2029	-	426
			Sep	CL	2	1268		
			Oct	CL	1	522		
			Nov	CL	4	2242	-	440
			Dec	CL	2	999		
		GN	Jun	CL	4	315		
			Jul	CL	6	1200	-	1262[4]
			Aug	CL	12	1876		
			Sep	CL	2	121	-	523[5]
		LL	Sep	CL	3	599	-	523[5]

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)	3L	LHP	Jun	CL	11	2811	-	1262[4]
			Sep	CL	10	1482	-	523[5]
		FPN	Jun	CL	11	6440	-	1262[4]
			Jul	CL	6	2278		
	3N	OTB	Feb	CL	1	757	-	78
			Jun	CL	2	1157	-	100
			Sep	CL	1	264	-	110
			Nov	CL	3	1641	-	225
	3O	OTB	Jan	CL	1	309	-	66
			May	CL	6	1246	-	568
			Jun	CL	1	592		
			Sep	CL	1	735	-	62
			Nov	CL	5	2456	-	430
			Dec	CL	3	1449		
	3Pn	OTB	Feb	CL	1	234	-	82
		LL	Mar	CL	8	2694	-	411
	3Ps	OTB	Jan	CL	2	732	-	256
			Feb	CL	1	476		
			Mar	CL	1	554		
			Apr	CL	1	432	-	61
		GN	May	CL	4	456	-	812[6]
			Jun	CL	4	831	-	708[7]
		LL	Feb	CL	1	1383	-	166
			Mar	CL	4	2011	-	812[6]
			Apr	CL	8	1904		
			May	CL	12	3669		
			Jun	CL	3	835	-	708[7]
			Jul	CL	6	1723		
			Aug	CL	5	1415		
			Sep	CL	7	1973	-	546
			Oct	CL	1	443		
			Nov	CL	5	1339		
		LHP	Aug	CL	1	137	-	708[7]
		FPN	Jun	CL	9	3495	-	708[7]
			Jul	CL	1	463		
	4R	OTB	Jan	CL	7	3275	-	389
			Feb	CL	2	1198		
			May	CL	5	2690	-	298
			Jun	CL	1	317		
			Sep	CL	1	216	-	30
		GN	May	CL	6	1677	-	225
			Jun	CL	10	5027	-	637[8]
		LL	Sep	CL	1	360	-	77
		FPN	Jul	CL	3	1471	-	637[8]
	4Vn	OTB	Jan	CL	1	249	-	-
Denmark (G)	1C	OTB	Jan	CL	1	881	2	398
			Feb	CL	1	971		
			Mar	CL	1	886		
			May	CL	1	922	1	295
	1D	LHP	Aug	CC	2	1784	3	516
			Sep	CC	1	61		
		FPN	May	CC	1	462	2	199
			Jul	CC	3	2785	8	655
			Aug	CC	1	179		
	1E	OTB	Apr	CL	1	917	1	255
		FPN	Sep	CL	2	1665	1	275

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
Denmark (G)	1F	OTB	Aug	CL	1	911	1	330
			Sep	CL	1	1411		
France (M)	2J	OTB	Feb	CC	1	116		
	3K	OTB	Feb	CC	2	400		
	3L	OTB	Feb	CC	2	365		
			Mar	CC	5	1004		
	3M	OTB	Oct	CC	5	1019		
			Nov	CC	20	4053		
	3Pn	OTB	Feb	CC	1	200		
	3Ps	OTB	Feb	CC	1	201		
	4R	OTB	Jan	CC	9	1629		
			Feb	CC	2	400		
			Mar	CC	6	1201		
	4Vn	OTB	Jan	CC	2	400		
			Feb	CC	7	1532		
			Mar	CC	3	600		
France (SP)	3L	OTB	May	CL	1	331	-	-
			Oct	CL	2	496	-	-
	3Ps	OTB	Feb	CL	1	362	42	660[9]
			May	CL	1	244	-	-
			Oct	CL	1	304	-	-
	4R	OTB	Jan	CC	8	2206	17	945[10]
			Mar	CC	1	242		
	4Vn	OTB	Feb	CL	2	750	-	-
Fed. Rep. Germany	1C	OTB	Mar	CC	4	997	7	491[11]
	1D	OTB	Mar	CC	7	1655	7	491[11]
	1E	OTB	Mar	CC	7	503	7	491[11]
	1F	OTB	Jan	CL	1	267	7	491[11]
	E.G.	OTB	Jan	CL	1	380	2	256
			Feb	CL	1	338		
			May	CL	2	637	1	159
			Jun	CL	1	374		
			Jul	CL	1	343	1	130
			Aug	CL	1	228		
	2H	OTB	Feb	CC	5	1412	5	193
	2J	OTB	Feb	CC	24	6853	26	1102[12]
	3K	OTB	Feb	CC	2	561	26	1102[12]
German Dem. Rep.	2J	OTB	Jan	CC	5	1256	5	440
			Feb	CC	20	3981		
			Mar	CC	1	137		
	3K	OTB	Feb	CC	2	307	1	80
Poland	2J	OTB	Jan	CC	2	2297	-	-
	3K	OTB	Feb	CC	2	608	-	-
			Mar	CC	1	377		
	3M	OTB	Dec	CC	1	469	2	299
Portugal	2J	OTB	Mar	CC	3	300	3	160
			Apr	CC	4	400	4	126
	3K	OTB	Mar	CC	8	781	8	189
			Apr	CC	6	600	6	139

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	3L	OTB	Apr	CC	3	300	6	119
			May	CC	3	300		
			Dec	CC	1	100	1	95
	3M	OTB	Apr	CC	5	500	10	130
			May	CC	6	600		
			Oct	CC	22	2200		
			Nov	CC	17	1647	38	224
			Dec	CC	3	300		
USSR	2J	OTB	Jan	CC	12	3529	-	-
			Apr	CC	3	979	-	-
	3K	OTB	Apr	CC	2	741	-	-
	3M	OTB	Jan	CC	28	10208	3	698
			Mar	CC	2	429		
			Aug	RC	4	809	-	-
	3N	OTB	Feb	CC	4	1287	-	-
			Mar	CC	3	1062		
			May	CC	2	675	-	-
UK	2J	OTB	Apr	CL	1	285	2	68[13]
	3K	OTB	Mar	CL	1	360	2	68[13]
	3M	OTB	May	CL	1	243	1	37
USA	4X	OTB	Jan	CL	1	67		
			Feb	CL	1	55		
			Jul	CL	1	100		
	5Y	OTB	Jan	CL	3	332		
			Feb	CL	2	104		
			Mar	CL	3	276		
			Apr	CL	2	104		
			May	CL	6	455		
			Jun	CL	2	200		
			Jul	CL	5	520		
			Aug	CL	1	100		
		GN	Nov	CL	1	100		
	5Ze	OTB	Jan	CL	11	844		
			Feb	CL	8	594		
			Mar	CL	5	362		
			Apr	CL	8	651		
			May	CL	8	703		
			Jun	CL	8	734		
			Jul	CL	6	538		
			Aug	CL	9	690		
			Sep	CL	4	330		
			Oct	CL	6	588		
			Nov	CL	6	556		
			Dec	CL	1	82		
	5Zw	OTB	Mar	CL	1	91		
			May	CL	1	68		

[1] Same key used for GN, LL, LHP and FPN.
[2] Same key used for GN and FPN.
[3] Same key used for GN 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 LL.
[7] Same key used for GN, LL, LHP and FPN.
[8] Same key used for GN and FPN.
[9] Research sample key for 3Ps used.
[10] Research sample key for 3Pn used.
[11] Same key used for 1C, 1D, 1E and 1F.
[12] Same key used for 2J and 3K.
[13] Same key used for 2J and 3K.

Table 2. Haddock length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M)	3O	OTB	May	CL	1	204	1	33
	3Ps	OTB	Aug	CL	2	717	2	47
	4Vs	OTB	May	CL	1	206	1	29
	4W	OTB	Jan	CL	1	202		
			Feb	CL	4	967	11	386
			Mar	CL	7	2532		
			Apr	CL	6	2085	6	202
			Aug	CL	1	254	1	28
			Oct	CL	1	253	1	27
		LL	Mar	CL	1	291	1	42
			Apr	CL	1	200		
			May	CL	2	377	4	122
			Jun	CL	1	200		
	4X	OTB	Jan	CL	5	1230		
			Feb	CL	6	1459	17	534
			Mar	CL	7	1989		
			Apr	CL	1	209		
			May	CL	7	1747	17	561
			Jun	CL	9	1988		
			Jul	CL	12	2582		
			Sep	CL	1	218	13	340
			Dec	CL	1	193	1	31
		SN	May	CL	1	250	1	34
		GN	Jul	CL	1	200	1	23
		LL	Jan	CL	2	363		
			Feb	CL	1	228	5	174
			Mar	CL	2	412		
			Apr	CL	2	387		
			May	CL	1	260	3	111
			Aug	CL	1	200	1	34
			Oct	CL	1	200	1	24
		LHP	Jul	CL	1	200		
			Aug	CL	1	238	2	66
	5Ze	OTB	Feb	CL	9	2011		
			Mar	CL	1	235	10	326
			Jul	CL	1	200	1	19
			Oct	CL	13	4811		
			Nov	CL	3	1394	11	255
Canada (N)	3N	OTB	Jul	CL	1	528		
	3O	OTB	Feb	CL	1	322		
			Apr	CL	1	638		
			Jun	CL	3	3114		
			Nov	CL	1	425		
	3Ps	OTB	Oct	CL	1	491		
			Nov	CL	1	480		
		FPN	May	CL	1	354		
	4W	OTB	Mar	CL	2	1046		
			Apr	CL	1	595		
USA	5Y	OTB	Jan	CL	3	197		
			Feb	CL	2	124	6	120
			Mar	CL	1	55		
			Apr	CL	4	190		
			May	CL	3	167	7	135
			Jul	CL	3	263		
			Sep	CL	2	116	5	89
			Oct	CL	2	154		
			Nov	CL	1	49	3	49

Table 2. Haddock (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	Jan	CL	10	674		
			Feb	CL	11	808	33	576
			Mar	CL	13	1008		
			Apr	CL	18	2490		
			May	CL	15	1023	49	867
			Jun	CL	16	1213		
			Jul	CL	18	1368		
			Aug	CL	20	1502	41	702
			Sep	CL	3	181		
			Oct	CL	9	654	15	277
			Nov	CL	6	478		

Table 3. Atlantic redfish length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M)	2J	OTM	Sep	CL	3	121/479		
		OTB	Aug	CL	5	477/604		
			Sep	CL	2	258/142		
			Nov	CL	1	107/95		
	3K	OTB	Feb	CL	1	99/101		
			Mar	CL	5	412/611		
			Apr	CL	1	114/86		
			Sep	CL	1	105/95		
	3O	OTB	Jul	CL	3	180/388		
	3Pn	OTB	Mar	CL	1	69/131		
			Aug	CL	2	164/236		
	3Ps	OTB	Jun	CL	1	137/63		
			Jul	CL	1	153/38		
			Aug	CL	4	324/487		
			Sep	CL	1	84/131		
	4R	OTB	Jan	CL	2	259/164		
			Feb	CL	1	150/50		
			Jul	CL	3	321/279		
			Aug	CL	3	235/365		
	4S	OTB	Jun	CL	3	248/352		
			Jul	CL	8	659/1041		
			Aug	CL	3	163/437		
			Sep	CL	2	207/193		
		OTM	Jul	CL	4	299/501		
			Aug	CL	1	72/128		
	4T	OTB	Jun	CL	8	670/925		
			Jul	CL	1	84/116		
			Aug	CL	1	64/136		
			Oct	CL	1	152/48		
		OTM	Jun	CL	5	403/597		
			Jul	CL	1	79/121		
			Aug	CL	1	96/104		
	4Vn	OTB	Jan	CL	1	71/98		
			Apr	CL	1	131/69		
			Jun	CL	5	469/543		
			Jul	CL	7	500/888		
			Sep	CL	1	94/116		
		OTM	Aug	CL	1	72/127		

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)	4Vs	OTB	Feb	CL	1	65/176		
			Mar	CL	2	268/132		
			Apr	CL	1	103/109		
			May	CL	1	88/112		
			Jun	CL	5	453/457		
			Jul	CL	7	607/793		
			Aug	CL	5	338/598		
			Oct	CL	1	111/139		
	4W	OTB	Apr	CL	1	52/177		
			Jun	CL	1	75/127		
			Jul	CL	3	203/418		
			Aug	CL	1	67/74		
	4X	OTB	Mar	CL	1	55/153		
			Jun	CL	1	66/149		
			Aug	CL	1	90/115		
			Dec	CL	1	135/133		
Canada (N)	2J	OTB	Feb	CL	1	184/263	-	-
			Jul	CL	1	388/352	-	-
			Aug	CL	1	415/302		
	3K	OTB	Feb	CL	1	134/180	-	-
			Mar	CL	8	901/1765		
			Apr	CL	9	1686/1358	-	-
			May	CL	2	624/516		
			Jul	CL	1	255/211	-	-
			Sep	CL	1	290/288		
			Nov	CL	1	104/323	-	-
		OTM	Jul	CL	1	304/323	-	-
	3L	OTB	Apr	CL	1	244/204	-	-
			Jun	CL	1	141/190		
			Nov	CL	2	404/466	-	-
			Dec	CL	2	437/638		
		OTM	Nov	CL	1	282/273	-	-
	3M	OTB	Sep	CL	1	367/311	-	-
		OTM	Aug	CL	2	1143/1416	-	-
			Oct	CL	2	469/451	-	-
	3O	OTB	Jun	CL	2	1256/1490	-	-
			Jul	CL	1	334/530		
			Aug	CL	1	211/381	-	-
			Sep	CL	1	329/385		
	3Ps	OTB	Feb	CL	1	132/345	-	632/761[1]
			Mar	CL	15	1324/1940		
			May	CL	1	277/176	-	632/761[1]
			Jun	CL	2	1382/1600		
			Aug	CL	2	861/899	-	632/761[1]
			Sep	CL	1	276/387		
			Nov	CL	2	473/482	-	632/761[1]
			Dec	CL	2	670/873		
	4R	OTB	Jan	CL	3	482/717	-	397/513
			Feb	CL	1	233/198		
	4Vs	OTB	May	CL	4	1128/993	-	-
France (SP)	3Ps	OTB	Jun	CL	1	109/78		
	4R	OTB	Jan	CL	2	168/95		
			Jun	CL	1	61/177		
USSR	2J	OTB	Feb	CC	1	155/107	-	-

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
USSR	3K	OTB	Jan	CC	1	102/241		
			Feb	CC	6	831/754	-	-
			Mar	CC	6	837/940		
			Apr	CC	8	1184/1443	-	-
	3L	OTB	Feb	CC	5	523/908	-	-
	3M	OTB	Jan	CC	14	2194/1883		
			Feb	CC	1	350/548	1	124/172
			Mar	CC	6	1333/1647		
	3N	OTB	Feb	CC	6	865/1124	-	-
			Mar	CC	3	389/547		
	4W	OTB	Jul	CC	2	234/181	-	-
UK	2J	OTB	May	CL	1	83		
	3M	OTB	May	CL	1	74		
USA	4X	OTB	Jan	CL	1	41/59	-	-
			Mar	CL	1	42/58		
			Apr	CL	1	48/52		
			May	CL	2	67/133	-	-
			Jun	CL	1	48/52		
			Aug	CL	2	89/111	-	-
	5Y	OTB	Jan	CL	8	365/448		
			Feb	CL	5	239/269	18	164/172
			Mar	CL	5	228/290		
			Apr	CL	6	296/307		
			May	CL	3	177/137	11	71/83
			Jun	CL	2	95/105		
			Jul	CL	3	151/142		
			Aug	CL	3	194/103	7	80/81
			Sep	CL	1	53/52		
			Oct	CL	4	234/197	7	78/84
			Nov	CL	3	149/151		
	5Ze	OTB	Feb	CL	2	106/102	6	49/49
			Mar	CL	4	201/222		
			Apr	CL	1	51/52	3	30/30
			May	CL	2	91/112		
			Sep	CL	2	80/94	2	17/20

[1] Same keys used for all 4 quarters.

Table 4. Silver hake length and age sampling data for 1978.

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	Aug	CC	1	193		
Cuba	4VWX	OTB	May	CC	?	5529/5669		
			Jun	CC	?	4859/5104		
			Jul	CC	?	2906/3789		
			Aug	CC	?	2735/3610		
			Sep	CC	?	244/467		

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
Japan	4W	OTB	Jul	CC	1	100		
	5Ze	OTB	Nov	CC	1	136		
	6C	OTB	Nov	CC	1	64/136		
			Dec	CC	1	89/111		
Romania	6B	OTM	Nov	CC	1	104/96		
USSR	4Vs	OTB	Jul	CC	4	200/600	-	-
	4W	OTB	Apr	CC	34	3266/3580		
			May	CC	129	14640/11181	-	334/403
			Jun	CC	95	10692/8461		
			Jul	CC	53	3920/6530		
			Aug	CC	83	7342/9245	-	278/372
	5Ze	OTB	Apr	CC	50	4997/4920	-	100/119
	5Zw	OTB	Jan	CC	29	3225/2679		
			Feb	CC	38	4350/3211	-	101/85
	6A	OTB	Mar	CC	99	9199/10679	-	85/97
USA	5Y	OTB	Mar	CL	1	43/61		
			Apr	CL	3	164/138		
			May	CL	5	265/237		
			Oct	CL	2	104/96		
	5Ze	OTB	Jul	CL	5	218/286		
			Sep	CL	2	78/115		
			Aug	CL	8	804		
			Oct	CL	1	29/63		
	5Zw	OTB	Mar	CL	3	421		
			Apr	CL	4	248		
			May	CL	2	206		
			Jul	CL	1	173		
			Sep	CL	1	165		
			Dec	CL	1	40		

Table 5. Red hake length and age sampling data for 1978.

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	Apr	CC	37	7427	-	122/140
	5Zw	OTB	Feb	CC	19	3846	-	91/85
	6A	OTB	Mar	CC	50	10098	-	50/105
USA	5Zw	OTB	Jan	CL	6	363		
			Feb	CL	3	139		
			May	CL	5	730		
			Jul	CL	2	381		
			Aug	CL	7	701		
			Sep	CL	4	286		
			Oct	CL	2	223		
			Nov	CL	3	240		
	6A	OTB	Jan	CL	1	74		

Table 6. Pollock length and age sampling data for 1978.

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	OTB	Nov	CL	1	113	1	21
	4Vs	OTB	Mar	CL	1	1226	1	41
			May	CL	3	931	3	104
			Jul	CL	1	314	2	81[1]
			Oct	CL	1	300	1	35
	4W	OTB	Jan	CL	2	444		
			Feb	CL	1	305	8	300
			Mar	CL	5	1356		
			Apr	CL	2	633		
			Jun	CL	3	809	5	192
			Jul	CL	1	261	2	81[1]
		FPN	Jun	CL	5	1059	3	46
	4X	OTB	Jan	CL	2	566		
			Feb	CL	5	1295	13	503
			Mar	CL	7	2404		
			Apr	CL	2	481		
			May	CL	4	1034	7	250
			Jun	CL	1	303		
			Jul	CL	6	1477	6	195
			Dec	CL	1	245	1	27
		GN	Jun	CL	2	323	2	55
			Aug	CL	1	183		
			Sep	CL	1	195	2	53
			Oct	CL	1	61	1	25
	5Ze	OTB	Feb	CL	6	2005	6	236
			May	CL	2	495		
			Jun	CL	2	613	4	118
			Jul	CL	1	393	1	23
			Oct	CL	1	266	1	22
USA	5Y	OTB	Jan	CL	1	108		
			Feb	CL	1	107	3	59
			Apr	CL	1	57	1	20
			Dec	CL	2	200	2	45
		GN	Oct	CL	1	100		
			Nov	CL	1	100	2	40
	5Ze	OTB	Jan	CL	1	71		
			Mar	CL	2	210	3	52
			Apr	CL	2	177		
			May	CL	1	106		
			Jun	CL	1	41	4	78
			Aug	CL	1	100		
			Sep	CL	1	100	2	40
			Oct	CL	1	100		
			Nov	CL	1	100		
			Dec	CL	4	418	6	117

[1] Same key used for 4Vs and 4W.

Table 7. American plaice length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample of	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada (M)	2J	OTB	Feb	CL	1	69/131	1	17/23
	3K	OTB	Feb	CL	2	121/284		
			Mar	CL	1	88/112	3	43/70
			May	CL	1	32/156	1	14/30

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 (M)	3O	OTB	Aug	CL	1	54/146	1	14/22
	3Ps	OTB	Oct	CL	1	63/76	1	14/21
	4R	OTB	Jan	CL	1	39/160	2	29/63
			Feb	CL	1	21/162		
	4S	OTB	May	CL	1	37/163	1	13/32
	4T	OTB	Sep	CL	1	47/153	1	15/31
			Oct	CL	1	33/174	1	11/22
		SN	Jun	CL	4	169/631	4	37/78
			Jul	CL	3	93/508	6	54/105
			Aug	CL	2	73/327		
			Sep	CL	1	14/181		
	4Vn	SN	Jun	CL	2	116/285	2	32/45
			Jul	CL	5	184/773	7	71/165
			Aug	CL	2	82/344		
	4Vs	OTB	Feb	CL	6	673/549	9	147/219
			Mar	CL	3	160/369		
			May	CL	4	203/686	4	58/110
			Aug	CL	2	134/266	2	41/50
		SN	Jun	CL	1	62/102	1	14/26
			Jul	CL	1	86/114	1	19/27
	4X	OTB	Mar	CL	1	36/64	1	15/27
Canada (N)	3K	OTB	Jan	CL	3	203/651	-	114/209
			Feb	CL	3	227/648		
		GN	Jul	CL	6	539/1892	-	160/320
	3L	OTB	Jan	CL	1	161/209	-	19/29
			Apr	CL	2	374/360	-	276/389
			May	CL	7	1625/1669		
			Jun	CL	3	521/747		
			Jul	CL	10	2104/2950	-	330/489
			Aug	CL	3	467/695		
			Sep	CL	2	435/779		
			Oct	CL	4	723/914	-	197/316
			Nov	CL	5	1171/2540		
			Dec	CL	1	87/286		
		GN	Jul	CL	1	40/229	-	170/341
			Aug	CL	6	554/1652		
	3N	OTB	Jan	CL	3	460/540	-	229/355
			Feb	CL	1	208/365		
			Mar	CL	2	585/896		
			Apr	CL	2	214/449	-	226/325
			May	CL	2	254/506		
			Jun	CL	2	321/495		
			Jul	CL	2	350/285	-	183/243
			Aug	CL	4	854/826		
			Oct	CL	7	1205/1568	-	206/327
			Nov	CL	3	577/640		
	3O	OTB	Feb	CL	2	485/590	-	144/207
			Mar	CL	2	399/671		
			Apr	CL	2	185/494	-	207/352
			May	CL	6	945/999		
			Jun	CL	1	58/418		
			Jul	CL	2	228/479	-	102/147
			Sep	CL	2	342/788		
			Oct	CL	3	385/745	-	253/444
			Nov	CL	3	492/1183		
			Dec	CL	1	119/246		

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)	3Ps	OTB	Feb	CL	1	105/218	-	77/113
			Mar	CL	1	142/226		
			Apr	CL	2	290/461	-	64/122
			May	CL	1	71/192		
			Aug	CL	2	538/1113	-	126/175
	4R	OTB	Jun	CL	1	79/205	-	27/60
Denmark(G)	1A	LL	Jun	CC	2	80		
	1D	LL	Apr	CC	2	73		
France(SP)	3O	OTB	May	CL	1	188		
USSR	2J	OTB	Feb	CC	1	108/198		
	3K	OTB	Jan	CC	1	90/280		
	3N	OTB	Feb	CC	3	253/735		
			Mar	CC	3	273/674		
			Jun	CC	2	717/924		
USA	5Y	OTB	Jan	CL	2	199		
			May	CL	2	73		
			Jun	CL	2	202		
	5Ze	OTB	Mar	CL	2	76		
			May	CL	5	474		
			Jun	CL	1	92		
			Jul	CL	2	173		
			Sep	CL	1	112		

Table 8. Witch flounder length and age sampling data for 1978.

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	May	CL	1	110/120	-	-
	3Ps	OTB	Feb	CL	1	158/44	1	16/17
	4R	OTB	Jan	CL	1	130/70	3	44/48
			Feb	CL	2	286/127		
	4S	OTB	Jan	CL	2	196/210	2	35/40
	4Vn	OTB	Jan	CL	1	84/118	2	28/25
			Mar	CL	1	124/76		
			May	CL	1	123/272	1	15/17
		SN	Jun	CL	6	127/1149	6	44/109
			Jul	CL	4	104/675	6	51/103
			Aug	CL	2	173/321		
	4Vs	OTB	Feb	CL	2	190/210	7	115/101
			Mar	CL	5	508/471		
	4W	OTB	Mar	CL	2	217/302	2	36/44
			Apr	CL	1	111/228	1	15/20
	4X	OTB	Mar	CL	1	101/117	1	18/17
Canada(N)	3K	OTB	Jan	CL	1	378/267	-	108/135
			Mar	CL	1	408/281		
			May	CL	3	476/803	-	124/174
		GN	Jul	CL	6	730/1066	-	233/345

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)	3L	OTB	May	CL	1	148/393	-	34/62
			Sep	CL	2	669/165	-	82/67
			Nov	CL	2	429/189	-	118/112
	3N	OTB	Mar	CL	3	524/612	-	87/109
			Apr	CL	1	216/276	-	32/44
			Jul	CL	1	133/293	-	61/81
			Nov	CL	2	302/632	-	133/179
			Dec	CL	1	146/339		
	3O	OTB	Feb	CL	1	443/287	-	136/166
			Mar	CL	2	267/445		
			Apr	CL	1	166/238	-	54/69
			May	CL	1	152/133		
			Dec	CL	1	128/231	-	47/70
	3Ps	OTB	May	CL	1	111/181	-	22/33
	4R	OTB	Jan	CL	6	1623/1801	-	212/245
Poland	2J	OTB	Mar	CC	1	113/537		
	3K	OTB	Feb	CC	3	842/1093		
			Mar	CC	1	189/720		
			Apr	CC	2	225/740		
USSR	2J	OTB	Feb	CC	2	187/399		
			Mar	CC	1	122/192		
	3K	OTB	Jan	CC	1	51/239		
			Feb	CC	16	1218/3083		
			Mar	CC	7	787/1273		
			Apr	CC	13	1535/2458		
	3L	OTB	Feb	CC	2	331/351		
USA	5Y	OTB	Feb	CL	2	201		
			Jun	CL	2	85		
			Jul	CL	3	128		
			Aug	CL	4	170		
			Sep	CL	1	48		

Table 9. Yellowtail flounder length and age sampling data for 1978.

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	Jun	CL	1	103/90	1	11/15
	3O	OTB	Jul	CL	1	85/115	1	11/18
	4Vs	OTB	Apr	CL	1	45/137	4	50/52
			Jun	CL	3	380/220		
			Aug	CL	3	310/225	3	39/39
		SN	Jul	CL	3	43/529	3	19/56
	5Ze	OTB	Feb	CL	1	41/33	1	10/11
Canada(N)	3L	OTB	May	CL	2	408/501	-	182/220
			Jun	CL	5	2079/1732		
			Jul	CL	1	276/168		
			Aug	CL	2	495/360	-	102/118
			Sep	CL	1	221/299		

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)	3N	OTB	Feb	CL	1	129/317	-	31/56
			Apr	CL	3	405/560		
			May	CL	4	829/854	-	162/210
			Jun	CL	1	181/177		
			Jul	CL	3	524/873		
			Aug	CL	2	607/709	-	172/226
			Sep	CL	1	72/289		
			Oct	CL	6	932/1460		
			Nov	CL	3	312/629	-	221/320
			Dec	CL	1	151/225		
	3O	OTB	Apr	CL	2	412/455	-	158/202
			May	CL	6	1494/1159		
			Aug	CL	1	339/299	-	34/39
			Nov	CL	1	350/422	-	64/85
	3Ps	OTB	Apr	CL	7	1856/2169	-	179/231
			May	CL	1	175/259		
France(SP)	3O	OTB	May	CL	1	192		
			Oct	CL	1	185/239		
USA	5Ze	OTB	Jan	CL	-	273/385		
			Feb	CL	-	55/26	8	199/200
			Mar	CL	-	32/50		
			Aug	CL	-	626/907	14	296/355
			Sep	CL	-	34/144		
			Oct	CL	-	58/46	2	50/50
			Nov	CL	-	56/38		
	5Zw	OTB	Feb	CL	-	363/435	10	257/258
			Mar	CL	-	351/383		
			Apr	CL	-	136/203		
			May	CL	-	71/123	7	109/155
			Jun	CL	-	64/41		
			Jul	CL	-	131/158		
			Aug	CL	-	80/51	4	90/100
			Sep	CL	-	52/46		
			Oct	CL	-	77/99		
			Nov	CL	-	128/151	7	164/175
			Dec	CL	-	198/420		

Table 10. Greenland halibut length and age sampling data for 1978.

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	Jan	CL	3	261/336		
			Feb	CL	3	494/535	-	181/207
			Mar	CL	1	242/241		
			Apr	CL	2	227/320		
			May	CL	2	280/417	-	108/142
		GN	Jul	CL	6	983/1328	-	221/252
			Sep	CL	4	761/1176	-	176/240
	3L	OTB	Mar	CL	1	138/169	-	45/55
		GN	Jun	CL	4	444/678		
			Aug	CL	4	359/471	-	200/247
			Sep	CL	2	200/353	-	64/78
	4R	OTB	Feb	CL	1	174/141	-	37/58
			Jun	CL	1	32/47	-	31/45

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.	2J	OTB	Mar	CC	14	659/745	3	69/109[1]
	3K	OTB	Mar	CC	5	214/309	3	69/109[1]
Poland	2J	OTB	Jan	CC	1	245/320		
	3K	OTB	Feb	CC	4	924/1462		
			Mar	CC	2	367/822		
USSR	2J	OTB	Jan	CC	2	257/334		
			Feb	CC	10	1188/1614		
			Mar	CC	1	77/181		
			Apr	CC	1	120/195		
	3K	OTB	Jan	CC	1	105/125		
			Feb	CC	1	89/141		
UK	2J	OTB	May	CL	1	70		

[1] Same key used for Div. 2J and 3K.

Table 11. Winter flounder length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA	5Y	OTB	Jan	CL	-	129		
	5Ze	OTB	Jan	CL	-	76		
			Mar	CL	-	80		
			Apr	CL	-	137		
			May	CL	-	300		
			Jun	CL	-	168		
			Jul	CL	-	407		
			Aug	CL	-	200		
			Sep	CL	-	277		
			Oct	CL	-	472		
			Nov	CL	-	522		
			Dec	CL	-	177		
	5Zw	OTB	May	CL	-	180		
			Jul	CL	-	127		
			Aug	CL	-	141		
			Nov	CL	-	95		
	6A	OTB	Apr	CL	-	147		
			May	CL	-	112		
			Sep	CL	-	144		
			Oct	CL	-	163		
			Dec	CL	-	132		

Table 12. Summer flounder length and age sampling data for 1978.

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	Feb	CL	-	560		
			Apr	CL	-	667		
			May	CL	-	379		
			Oct	CL	-	29		

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	5Zw	OTB	Jan	CL	-	330		
			Mar	CL	-	279		
			Jun	CL	-	202		
			Sep	CL	-	76		
			Oct	CL	-	256		
	6A	OTB	Mar	CL	-	18		
			Apr	CL	-	47		
	6C	OTB	Jan	CL	-	145		
			Dec	CL	-	405		

Table 13. Windowpane length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA	5Z	OTB	Apr	CL	3	33/377		

Table 14. Cusk length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada(M)	4X	LL	Jan	CL	1	319		
			Apr	CL	1	185		
			Jun	CL	1	161		

Table 15. Greenland cod length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Denmark(G)	1D	FPN	Jul	CC	2	102	4	163
			Aug	CC	1	48		

Table 16. Roundnose grenadier length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Romania	3K	OTM	Aug	CC	5	437/620		
USSR	2G	OTB	Sep	CC	4	600/396		
		OTM	Jul	CC	6	1278/911		
			Sep	CC	3	462/312		
	3K	OTB	Aug	CC	5	929/571		
			Dec	CC	5	494/452		
		OTM	Jul	CC	3	701/386		
	3M	OTB	Feb	CC	4	772/708		
			Mar	CC	4	1028/1052		

Table 17. White hake length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Canada(M)	4S	OTB	Jun	CL	1	190		
	4X	LL	May	CL	1	317		

Table 18. Atlantic Herring length and age sampling data for 1978.

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	PS	Nov	CL	-	3257	-	257
			Dec	CL	-	533		
	4W	PS	Jan	CL	-	7584	-	908
			Dec	CL	-	4355	-	490
	4X(NS)	PS	Jan	CL	-	5111	-	991
			Feb	CL	-	2286		
			Mar	CL	-	1712		
			May	CL	-	230	-	1882[1]
			Jun	CL	-	4148		
			Jul	CL	-	9612	-	3809[2]
			Aug	CL	-	11082		
			Sep	CL	-	3007		
			Oct	CL	-	2359	-	1296[3]
			Nov	CL	-	474		
			Dec	CL	-	128		
		GN	May	CL	-	119	-	1882[1]
			Jun	CL	-	985		
			Jul	CL	-	1000	-	3809[2]
			Aug	CL	-	751		
			Sep	CL	-	185		
		FWR	May	CL	-	823	-	1882[1]
			Jun	CL	-	2881		
			Jul	CL	-	1910	-	3809[2]
			Aug	CL	-	569		
			Sep	CL	-	435		
			Oct	CL	-	376	-	1296[3]
			Nov	CL	-	197		
			Dec	CL	-	351		
	4X(NB)	FWR	May	CL	-	3595	-	1123
			Jun	CL	-	3908		
			Jul	CL	-	6206	-	2865
			Aug	CL	-	11896		
			Sep	CL	-	5885		
			Oct	CL	-	3017	-	342
			Dec	CL	-	184		
USA	5Yn	MIS	Apr	CC	3	199	21	409
			May	CC	34	1730		
			Jul	CC	136	6118	155	2857
			Aug	CC	99	5370		
			Sep	CC	62	3067		
			Oct	CC	43	2144	29	500
			Nov	CC	19	950		
	5Ys	MIS	Jan	CC	8	897	33	915
			Feb	CC	12	779		
			Mar	CC	13	1045		

Table 18. Atlantic herring (continued)

Country	ICNAF Div.	Gear	Month	Type of samples	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA	5Ys	MIS	Apr	CC	2	33	5	150
			May	CC	2	198		
			Jun	CC	1	74		
			Aug	CC	5	197	12	418
			Sep	CC	8	772		
			Oct	CC	13	825	17	516
			Nov	CC	11	750		
			Dec	CC	4	381		

[1] Same key used for purse seine, gillnets and weirs.
[2] Same key used for purse seine, gillnets and weirs.
[3] Same key used for purse seine and weirs.

Table 19. Atlantic mackerel length and age sampling data for 1978.

Canada(M)	4T	PS	Jul	CC	11	1245	11	203
			Aug	CC	1	110		
			Oct	CC	1	142	1	27
		GN	Jun	CC	13	1479	13	313
			Jul	CC	2	220	7	147
			Aug	CC	5	534		
		LHP	Jul	CC	2	158	3	55
			Aug	CC	2	224		
	4Vn	LHP	Aug	CC	5	652	1	18
		FPN	Jun	CC	8	925	3	74
			Jul	CC	2	233	1	26
	4W	GN	Jun	CC	4	505	2	47
			Jul	CC	3	404	1	28
		LHP	Jul	CC	1	107	5	114
			Aug	CC	8	865		
	4X	GN	May	CC	1	125	6	155
			Jun	CC	7	749		
			Jul	CC	1	101	2	61
		FPN	Jun	CC	15	1646	9	267
			Jul	CC	6	734	5	217
		FWR	Aug	CC	1	100	2	132
Canada (N)	3K	PS	Jul	CL	1	50	5	250
			Aug	CL	4	200		
	3L	SB	Aug	CL	1	50	1	50
		PS	Sep	CL	2	100	2	100
		GN	Aug	CL	1	35	1	35
		FPN	Jul	CL	3	150	3	150
	4R	GN	Jul	CL	3	145	3	145
		FPN	Jul	CL	1	50	1	50
Romania	4W	OTM	Jul	CC	1	202	1	75
	6B	OTM	Nov	CC	2	200	1	48
			Dec	CC	2	200		
USSR	4W	OTB	Jul	CC	5	964		
			Aug	CC	3	620		

Table 19. Atlantic mackerel (continued)

Country	ICNAF Div.	Gear	Month	Type of samples	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA	5Y	FPN	Jun	CL	1	49		
			Jul	CL	1	81		
	5Zw	OTB	Apr	CL	1	117		

Table 20. Atlantic butterfish length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Japan	5Zw	OTB	Dec	CC	4	796		
	6A	OTB	Dec	CC	1	104/96		
	6C	OTB	Dec	CC	1	200		
Romania	5Zw	OTM	Oct	CC	3	590	3	124
			Nov	CC	4	800		
	6A	OTM	Dec	CC	4	800	2	43

Table 21. Atlantic argentine length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Japan	4Vs	OTM	Aug	CC	1	200		
	4X	OTB	Jul	CC	2	300		
			Aug	CC	5	1001		
			Sep	CC	2	300		
USSR	4Vs	OTB	Jun	CC	4	761	-	85
	4W	OTB	Apr	CC	9	1907	-	372
			May	CC	32	6332		
	4X	OTB	May	CC	5	1072	-	179
			Jun	CC	1	73		

Table 22. Capelin length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Cuba	3N	OTM	Jul	RC	3	622		
German Dem. Rep.	3L	OTM	May	CC	1	501/94	1	80/20
Japan	3K	OTM	Oct	CC	1	95/113		
	3L	OTM	Jun	CC	5	422/571		

Table 22. Capelin (continued)

Country	ICNAF Div.	Gear	Month	Type of samples	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Japan	3N	OTM	Jun	CC	9	880/1528		
			Jul	CC	5	321/673		
	3O	OTM	Jun	CC	2	400		
Poland	3L	OTM	Jan	CL	1	196/175		
			Jun	CL	1	119/241		
Romania	2J	OTM	Aug	CC	2	80/464	12	370/571
			Sep	CC	10	442/2112		
	3K	OTM	Aug	CC	5	498/1276	9	279/402
			Sep	CC	4	166/906		
			Oct	CC	12	538/1879	13	403/576
			Nov	CC	2	265/168		
USSR	2J	OTM	Aug	CC	5	220/1285		
	3K	OTM	Aug	CC	9	835/2107		
			Nov	CC	8	1305/1367		
	3L	OTM	Apr	CC	5	342/1207		
			May	CC	6	872/1341		

Table 23. Long-finned squid (*Loligo*) length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Japan	5Ze	OTB	Nov	CC	1	194		
			Dec	CC	1	199		
	5Zw	OTB	Dec	CC	6	981		
	6A	OTB	Dec	CC	1	113/94		
	6C	OTB	Nov	CC	1	200		
			Dec	CC	2	394		
Romania	5Zw	OTM	Oct	CC	3	475		
			Nov	CC	5	1000		
	6B	OTM	Dec	CC	3	594		
USA	5Zw	OTB	Apr	CL	2	201		
			May	CL	2	102		
			Jun	CL	3	334		
			Jul	CL	1	100		
			Sep	CL	1	100		
			Oct	CL	1	100		
	6A	FPN	May	CL	1	78		

Table 24. Short-finned squid (*Illex*) length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Bulgaria	4VWX	OTM	Jul	CC	4	900		

Table 24. Short-finned squid (*Illex*) (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)	4X	FPN	Nov	CL	2	73/116		
Canada(N)	3K	LHM	Jul	CL	2	151/152		
			Aug	CL	2	107/156		
			Sep	CL	5	269/370		
	3L	LHM	Jul	CL	1	242/223		
			Oct	CL	5	595/796		
			Nov	CL	3	412/547		
	3Ps	LHM	Jul	CL	1	143/431		
			Aug	CL	1	104/339		
			Sep	CL	1	93/297		
Cuba	4VWX	OTM	May	CC	2	49/115		
			Jun	CC	2	132/111		
					2	429		
			Jul	CC	3	946/708		
					1	191		
			Aug	CC	5	599/450		
			Sep	CC	4	3338/2763		
France(M)	4W	OTB	Sep	CL	3	218/228		
France(SP)	3Ps	OTB	Oct	RC	36	436/729		
		LHP	Jul	CL	1	37		
			Oct	CL	1	237		
Japan	3O	OTB	Jul	CC	1	200		
			Sep	CC	1	200		
			Oct	CC	1	201		
	4Vs	OTB	Aug	CC	1	200		
			Sep	CC	3	501		
					4	372/434		
			Oct	CC	2	304		
	4W	OTB	Jul	CC	5	999		
					2	197/203		
			Aug	CC	3	611		
					4	458/342		
			Sep	CC	3	400		
					4	420/379		
			Oct	CC	5	902		
					4	422/381		
			Nov	CC	2	402		
	4X	OTB	Jul	CC	1	200		
			Aug	CC	3	598		
					1	88/112		
			Oct	CC	1	200		
	5Ze	OTB	Nov	CC	2	189/211		
	5Zw	OTB	Dec	CC	1	120/80		
	6B	OTB	Jul	CC	8	1612		
					1	157/43		
			Aug	CC	6	1200		
			Sep	CC	1	200		
	6C	OTB	Nov	CC	1	110/90		
					2	193/207		
Poland	3N	OTM	Jul	CC	1	275/281		
	4W	OTM	Jul	CC	6	1761/1363		
			Aug	CC	2	676/448		

Table 24. Short-finned squid (*Illex*) (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
Romania	4W	OTM	Jul	CC	13	1958/1469		
			Aug	CC	2	347/281		
	5Zw	OTM	Oct	CC	5	340/392		
	6B	OTM	Nov	CC	8	772/829		
USA	5Ze	OTB	Sep	CL	1	53		

Table 25. Sea scallops length and age sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of samples	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
USA	5Ze	DRB	Jan	CL	1	250	3	92
			Mar	CL	2	465		
			Apr	CL	6	1291	4	99
			May	CL	1	329		
			Jul	CL	4	814		
			Aug	CL	11	2555	-	-
			Sep	CL	11	2763		
			Oct	CL	9	2163		
			Nov	CL	8	1686	-	-
			Dec	CL	7	1418		
	6NK	DRB	Jan	CL	1	234		
			Feb	CL	3	463	1	25
			Mar	CL	1	366		
			Apr	CL	1	301		
			May	CL	5	1605	1	29
			Jun	CL	11	2523		
			Jul	CL	5	1353		
			Aug	CL	5	1083	-	-
			Sep	CL	6	1422		
			Oct	CL	5	1330	-	-
			Dec	CL	1	100		

PART 4

Sampling Data from Research Vessel Surveys, 1978

The following table contains a list of research samples reported by certain countries for 1978. 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 26. Research sampling data for 1978.

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
ATLANTIC COD								
Denmark(G)	1D	OTB	Apr	RC	3	274	3	274
		LHP	Aug	RC	4	102	4	102
	1E	OTB	Nov	RC	1	105	1	105
France(SP)	2J	OTB	Jan	RC	12	6524	-	621[1]
	3K	OTB	Jan	RC	1	196	-	621[1]
			Feb	RC	13	1419		
	3L	OTB	Feb	RC	10	2549	-	621[1]
	3Pn	OTB	Feb	RC	4	112	17	945[2]
	3Ps	OTB	Feb	RC	8	438	42	660
			Mar	RC	44	614		
	4R	OTB	Jan	RC	11	3462	17	945[2]
			Feb	RC	8	3128		
Fed. Rep. Germany	1C	OTB	Dec	RC	3	540	18	714[3]
	1D	OTB	Dec	RC	13	1013	18	714[3]
	1E	OTB	Dec	RC	4	104	18	714[3]
	1F	OTB	Dec	RC	5	1571	18	714[3]
	2J	OTB	Nov	RC	21	538	20	527
German Dem. Rep.	2H	OTB	Oct	RC	4	149	3	138
	2J	OTB	Sep	RC	12	355	-	-
	3K	OTB	Oct	RC	21	200	3	94
ATLANTIC REDFISH								
Denmark(G)	1A	OTB	Nov	RC	4	1616		
	1B	OTB	Jul	RC	6	1265		
			Aug	RC	4	1482		
	1C	OTB	Jul	RC	2	579		
	1D	OTB	Jan	RC	1	337		
			Apr	RC	5	1009		
		OTM	Feb	RC	1	111		

Table 26. Research (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
France(SP)	2J	OTB	Feb	RC	7	135/119		
	3K	OTB	Feb	RC	10	461/492		
	3L	OTB	Feb	RC	6	289/214		
	3Pn	OTB	Feb	RC	5	829/684		
	3Ps	OTB	Feb	RC	14	1722/1549		
			Oct	RC	37	3781/3627		
	4R	OTB	Feb	RC	7	761/508		
German Dem. Rep.	0B	OTB	Oct	RC	14	1570/1289	3	129/101
	2G	OTB	Oct	RC	16	1168/1092	3	139/107
	2H	OTB	Oct	RC	12	1297/959	4	226/152
	2J	OTB	Sep	RC	30	3518/2973	10	345/330
	3K	OTB	Oct	RC	16	4684/4383	3	611/680
USSR	3M	OTB	Jan	RC	-	296	1	296
AMERICAN PLAICE								
Denmark(G)	1B	OTB	Jul	RC	6	149		
			Aug	RC	3	55		
	1C	OTB	Mar	RC	1	1025		
			Apr	RC	1	48/28		
	1D	OTB	Feb	RC	1	73		
			Apr	RC	4	6/22		
	1E	OTB	Feb	RC	1	106		
France(SP)	3Ps	OTB	Feb	RC	4	200/230	27	345/494
			Mar	RC	36	1664/2523		
			Oct	RC	48	1821/2197	36	200/258
WITCH FLOUNDER								
France(SP)	3Ps	OTB	Feb	RC	6	101/71	24	158/183
			Mar	RC	25	316/313		
GREENLAND HALIBUT								
Denmark(G)	1A	OTB	Oct	RC	1	160		
			Nov	RC	4	1159		
	1B	OTB	Jul	RC	3	164		
			Aug	RC	4	2237		
	1D	OTB	Jan	RC	1	111		
			Apr	RC	3	73		
			Jul	RC	1	77		
German Dem. Rep.	0B	OTB	Oct	RC	31	959/859	12	384/351
	2G	OTB	Oct	RC	17	1335/702	9	430/287
	2H	OTB	Oct	RC	12	562/457	7	290/216
	2J	OTB	Sep	RC	31	946/1232	9	180/225
	3K	OTB	Oct	RC	36	552/663	7	174/247

Table 26. Research (continued)

Country	ICNAF Div.	Gear	Month	Type of sample	Length samples No.	Length samples No. meas.	Age samples No.	Age samples No. aged
GREENLAND COD								
Denmark(G)	1D	OTB	Feb	RC	1	174	1	174
		LL	Apr	RC	1	77	1	76
		LHP	Aug	RC	2	115	3	115
	1E	OTB	Feb	RC	1	202	1	182[4]
			Apr	RC	1	265	1	182[4]
POLAR COD								
Denmark(G)	1A	OTB	Nov	RC	4	58		
ROUNDNOSE GRENADIER								
German Dem. Rep.	0B	OTB	Oct	RC	6	439/297	3	141/69
	2G	OTB	Oct	RC	3	509/409	3	74/95
	2H	OTB	Oct	RC	2	298/184	1	50/19
	2J	OTB	Sep	RC	7	499/245	4	186/92
	3K	OTB	Oct	RC	2	240/251	2	67/90
ATLANTIC WOLFFISH								
Denmark(G)	1A	LL	Jun	RC	2	127		
SPOTTED WOLFFISH								
Denmark(G)	1A	LL	Jun	RC	2	81		

[1] Same key used for 2J, 3K and 3L.
[2] Same key used for 3Pn and 4R.
[3] Same key used for 1C, 1D, 1E and 1F.
[4] Same key used for 1st and 2nd quarters.