

ANNUAL MEETING - JUNE, 1963.Serial No. 1105  
(D.c.8)

Document No. 34

International Council for the  
Exploration of the Sea.Report of the 1962 Iceland Trawl Mesh Selection Working Group

This report is due to be submitted for the formal approval of the Comparative Fishing Committee of ICES at the annual meeting of the Council in September, 1963. Until that time it is a provisional document, and must not, therefore, be quoted or reproduced in any other form.

Introduction

Following a request from the Permanent Commission, the North-Western Working Group was set up in May, 1960 to investigate the state of the fish stocks in the northern part of the Convention Area outside the north-east Arctic. This Group was to analyse the effects on the fish stocks of further increases of mesh sizes above 110 mm.

During its work the Group felt the need for more selectivity data for some of the more important species and it therefore passes the following recommendation for the consideration of the Liaison Committee:-

"1. Selectivity data for cod, haddock, redfish and coalfish in Icelandic waters are needed. It is thought that these could most effectively be obtained by an international experiment along the lines of those carried out in the North Sea and the Arctic in 1959 and 1960. Accordingly, the Group recommends that the attention of the Chairman of the Comparative Fishing Committee be drawn to this proposition at an early date, with a view to planning an experiment of this kind at the 1961 meeting of the Council".

This recommendation was adopted by the Comparative Fishing Committee at its 1961 meeting and Mr. Jón Jónsson was asked to act as Organizer of the experiment.

During the detailed planning he was assisted by Mr. A.R. Margetts who also undertook to work out the first results for presentation at the 1962 ICES Meeting.

The experiments were carried out during the months April to September, 1962.

As an outcome of co-operation between ICES and ICNAF, Canada also took part in the experiment.

At the 1962 ICES Meeting, Mr. Margetts gave a summary of the results obtained so far, and at that meeting it was decided to have the results worked out in full detail by a Working Group. This Group was to be composed of representatives of the countries which took part in the experiment. Mr. Jon Jonsson was made Convenor of this Group with special assistance by Mr. Margetts.

The Group met at Charlottenlund, Copenhagen, 3-7th December,

1962.

Participants:- Jón Jónsson (Convenor, Iceland)  
 A.R. Margetts (England)  
 H. Bohl (German Federal Republic)  
 E. Bratberg (Norway)  
 J. Pope (Scotland)  
 A.I. Treschev (U.S.S.R.)  
 L.K. Boerema (Liaison Committee)  
 E. Akyuz (by special agreement with FAO).

Unfortunately a representative for Canada was not able to attend the meeting but his data with a preliminary working-up were available to the Group.

The Experiments

During the summer months of 1962 seven countries with eight ships took part in co-ordinated trawl mesh selection experiments in Icelandic waters.

The chief aim of the experiments was to establish the selectivity on the principal commercial species of double-braided manila trawl cod-ends. This was to be done by use of the covered cod-end technique. Further aims were the comparison of selectivities measured by the alternate or paired haul techniques with those measured by the covered cod-end technique, measurement of the selectivity of cod-ends made from various other commonly used materials, and investigation of the effect on selectivity of forms of cod-end top-side chafers.

Table 1 shows the types of ships that took part in the experiments, their gear and their working time at Iceland.

COUNTRY	NAME	SHIP			TRAWL		WORKING DATES	WORKING AREAS	No. OF HAULS
		TONS	LENGTH M O.A.	H.P.	TYPE	HEADLINE LENGTH M			
ICELAND	MARÍA JULÍA	138	27.8	470	GRANTON	17	28/3 - 1/4	SW ICELAND	13
"	" "						20-28/7	N ICELAND	43
"	" "						6-8/8	S&W ICELAND	32
NORWAY	G. O. SARS	600	52	1,200	"	20	10-13/5	SW ICELAND	16
"	JOHAN HJORT	697	52.3	1,300	"	20	13-16/9	SW ICELAND	8
SCOTLAND	EXPLORER	862	61	1,200	"	24	16-25/6	N ICELAND	26
FED. REP. GERMANY	ANTON DOHRN	999	62.3	850	"	32	9-26/7	N,NW&W ICELAND	62
U.S.S.R.	GONCHAROV	3,000	80	2,000	"	35	27/7-28/8	N & NW ICELAND	26
ENGLAND	ERNEST HOLT	604	59	900	"	25	20-28/7	N ICELAND	51
CANADA	A. T. CAMERON						20-28/7	N ICELAND	51

The ships were of three classes, the large stern-trawler GONCHAROV, the small cutter-type side trawler MARIA JULIA, and the others all side trawlers of similar size to each other.

In July ERNEST HOLT, A. T. CAMERON and MARIA JULIA fished simultaneously on the same grounds, otherwise ships worked individually.

G.O. SARS, JOHAN HJORT, EXPLORER, ANTON DOHRN, and GONCHAROV made only covered hauls. MARIA JULIA made mostly covered hauls with some alternate hauls, while ERNEST HOLT and A. T. CAMERON each made some covered hauls but took advantage of their fishing together to make paired alternate hauls, one ship fishing a small mesh simultaneously with the other fishing a large mesh, and each ship changing from large to small mesh and vice versa after two hauls. ERNEST HOLT, A. T. CAMERON, MARIA JULIA, G. O. SARS and JOHAN HJORT used only manila cod-ends. ANTON DOHRN used manila and Perlon, EXPLORER manila and nylon, and GONCHAROV manila and capron. GONCHAROV was the only ship to employ a top-side chafer and to make comparative hauls with and without the chafer.

All covered cod-end hauls were made with top-side covers of 35-70 mm mesh made of polythene, hemp or polyamide, and all except the nylon cod-end used by EXPLORER and the Norwegian cod-ends were with the bottom side of the cod-end blinded on the inside.

The Russian top-side chafer was a modification of the ICNAF type; its specifications were that it was of the same mesh size as the cod-end, of the same length, fixed at the forward end and two sides and open at the rear, and laced mesh for mesh at the forward end of the cod-end at 100 meshes width but maintaining its 100 meshes width where the cod-end tapered to and remained at 80 meshes.

The great majority of the hauls were of duration between one and two hours. Fish were measured to the nearest cm, the lengths being total except by Canada (fork length) and without the lobes of the tail fin smoothed down except by Scotland. Girth measurements were made of samples, either or both of the natural maximum body girth or maximum head girth (around rear edge of operculum) being recorded.

Weather conditions during the course of the experiments were mostly very fine indeed.

In the absence of the official ICES gauge, meshes were measured with other spring-loaded gauges which were subsequently calibrated against the ICES gauge.

#### The Data

The data collected were on selection of cod, haddock and redfish (type marinus) by cod-ends made of double manila, double capron, double nylon and double perlou. In nearly all cases the data collected were insufficient to derive selection curves for single hauls and, therefore, comparable hauls were grouped together. In most cases this meant combining hauls made in the same area within a short period of days. Exceptions to this were some data from ANTON DOHRN, MARIA JULIA and G.O. SARS, which were combined from different localities. Where data were so combined, this was justified by the similarity of the length composition of the catches in the separate localities.

The selection curves were drawn for covered, alternate and paired hauls. The percentages retained in the cod-end at each centimetre length were plotted, and the curves were fitted to these points by eye. The 50% lengths, as well as the selection ranges, were read off the so constructed curve. These figures are given in Tables 2-4 which also contain other items of information recommended as relevant in the report

of the ICES Mesh Selection Working Group (ICES, 1963). In these tables, values followed by a question mark indicate the rather unreliable results which were obtained from meagre or variable data. The selection range values were rounded to the nearest centimetre and the number of fish in the selection range for cod-end and cover were rounded to the nearest ten fish. The 50% lengths for haddock caught by A. T. CAMERON, measured fork length, were adjusted to total length.

The quantities caught in the cod-end and cover were weighed aboard A. T. CAMERON, EXPLORER and GONCHAROV, basketed on ANTON DOHRN, ERNEST HOLT and G. O. SARS and counted on MARIA JULIA.

The grouped data from which selection factors were calculated are given in Tables 5, 6 and 7.

During the course of experiments, girth measurements were made on board A. T. CAMERON (cod, haddock and redfish, head and maximum body girth), EXPLORER (cod and haddock, head girth), ANTON DOHRN (redfish types marinus and mentella, maximum body girth), and MARIA JULIA (cod and haddock, maximum body girth). The average girths at lengths are given in Tables 8, 9 and 10.

Data were collected and recorded separately for redfish meshed in the cod-end. (Table 7). These data were, however, included with the cod-end catches in calculating the selectivity values.

In general, although there were exceptions, the experiments were not conspicuously successful and the quality of data and results was not always as good as might be desired. The most obvious reason for this was that in the covered cod-end experiments the selection range of the mesh in use frequently did not match well with the length distribution of the fish available, and in the alternate haul experiments there were very marked differences between the length distributions of the fish being caught on the same ground from haul to haul. Thus, with the numbers of hauls often being rather few, the selection curves and the 50% points were not always clearly defined. A notable exception to this was ANTON DOHRN redfish, and, amongst the other data, some such as GONCHAROV cod, MARIA JULIA and ERNEST HOLT cod with large mesh, EXPLORER and ERNEST HOLT N. Iceland haddock, and MARIA JULIA S.E. Iceland haddock yielded more definite results than the remainder. So, in considering all the results in tables 2-4, it is reasonable to attribute a substantial amount of the variation in selection factors to experimental variation.

### Conclusions

1. Cod. Nine sets of data gave selection factors for covered cod-ends of double manila, of which two are of doubtful validity. The ordinary unweighted average of these nine values is 3.2 which is unaltered if the two less reliable figures, 2.8 and 3.3, are omitted. The range of selection factors is 2.8 to 3.4. The summary tables do not point to any relationship between size of catch and selection factor, but the grouping of the data in the summary tables could mask any such effect. However, in the cases where it was possible to examine smaller groupings, there was no apparent effect of catch size on selectivity.

The average value of 3.2 for the selection factor is close to the average (3.3) of results previously available for the Icelandic region. (ICES, 1963). The present figure is lower than those available for any other region.

Selection ranges varied from 8 to 18 cm with an average value of 13 cm. The selection ranges show a tendency to increase with the

extreme range of mesh sizes in the cod-end. The relationship between selection range and average mesh size is somewhat more marked. No correlation was evident between mesh size and extreme mesh range.

Selection factors from paired and alternate hauls are less reliable due to the marked variation between hauls both in length composition and in quantity caught, to the small number of hauls, and also, in the case of A. T. CAMERON at Skalfandi, to accumulations of Laminaria in the cod-end. Such figures as were obtained, however, show that in this experiment the selection factors from paired hauls are somewhat lower than those from covered hauls while that from the alternate hauls is considerably higher.

Selection factors were also obtained for the polyamide materials capron and nylon, the former material being used in cod-ends fitted both with and without top-side chafers. There is no evidence that the type of chafer used by GONCHAROV influenced the selection of cod. The selection factors for the polyamide materials are higher than the average for double manila, and the differential calculated within ships is close to, but lower than 10%.

The selection ranges for the synthetic cod-ends also show an increase with both range of mesh size and average mesh size, although for these cod-ends mesh size and mesh range are positively related.

Girth measurements of cod at Iceland were taken on A. T. CAMERON, MARIA JULIA and EXPLORER. (Table 6). It appears that N. Iceland cod is, in shape, intermediate between North Sea (Margetts, 1957) and Arctic cod (1959 International Arctic trawl mesh experiments; ICES, 1963). There appears to be no substantial cod shape differences between N. Iceland fishing grounds such as to affect selection. The regressions of girth on length are similar, so a comparison of girths can conveniently be made at an arbitrarily chosen length, in this case 50 cm as being near the 50% lengths in Arctic and Iceland experiments. There were differences between the various ships' girth measurements both at Iceland and in the Arctic, but it is seen that the two independent measurements at Iceland both give a head girth measurement at length 50 cm (23.7 and 24.0 cm), appreciably greater than the biggest Arctic measurements (21.8, 21.2 and 23.1 cm) and about 2 cm greater than the mean of the Arctic measurements. The maximum body girth at length 50 cm measured at Iceland (24.0 and 26.2 cm) was similar to, or rather bigger than, the comparable Arctic measurements (22.6, 23.8 and 25.0 cm). The maximum body girth measurement is affected by such as feeding and "blown" condition, but it is the only one available for comparison of North Sea and Iceland cod, and, as such, shows North Sea cod measured on an English ship to have about the same girth as Iceland cod measured on A. T. CAMERON and MARIA JULIA.

The foregoing results are all from hauls made off the north coast of Iceland in the summer. Differences in shape and condition of cod between north and south Iceland are known to exist, the fish in the south generally being thicker, length for length, than those in the north. It would accordingly be expected that selectivity in the south would be lower than in the north. Seasonal differences within the northern area are unlikely to affect selectivity appreciably.

The mean of all the Arctic cod covered double manila trawl cod-end mesh selection factors from the ICES Mesh Selection Working Group report was 3.5. (Note: that report considers that, allowing for cover effects and catch size, the true factor might be 3.7). The comparable factors for North Sea and Iceland cod, both from limited experimental

evidence, were both 3.4; the new evidence from 1962 indicates a selection factor for Iceland of 3.2 which is 8.5% below the Arctic factor while the head girth at Iceland was 9% greater than in the Arctic. Body girth measurements suggest that the North Sea cod selection factor should be about the same as the Iceland factor; such limited experimental evidence as exists indicates it to be rather higher, but the difference could well be due to experimental variation.

2. Haddock. The data yielded sixteen estimates of the selection factor for covered cod-ends of double manila ranging from 3.0 to 3.6 with an unweighted average of 3.35. These results came from hauls taken both off the north and off the south coast of Iceland and no significant differences were found between these two areas. The data were not sufficient to analyse the relationship between catch size and selection factor. The average selection factor is higher than that of 3.2 calculated from previously available data for the Icelandic area and also higher than those for all other ICES areas for which data are available, although not very different from that for the Arctic. (ICES, 1963). The reasons for this difference are not known, but the range of results suggests that at least not all of the difference is due to experimental variation in 1962.

The selection ranges from the covered double manila hauls vary from 4 to 13 cm with an average value of 9 cm, of which most of the lower values are considered doubtful. There is a clear relation between selection range and mesh size, the selection range increasing with the mesh size. On the other hand there is no relationship between selection range and the extreme range of mesh sizes in the cod-end.

Selection factors for double capron again do not show any real evidence of an effect on selection factor of the top-side chafer used by GONCHAROV.

EXPLORER data show the selectivity on haddock of double nylon to be about 10% higher than that of double manila, but GONCHAROV data indicate no selectivity difference between these two materials on haddock.

The polyamide materials show a relationship between selection range and mesh size similar to that for double manila. In these materials a relationship is also found between selection range and extreme range of mesh sizes, the latter being directly related to average mesh size for nylon and capron.

Girth measurements of haddock at Iceland were taken on three of the ships; on two of these the maximum body girths were measured and these at total length 50 cm (25.6 and 27.7 cm) were of the same order as for North Sea haddock (27.2 cm, Margetts, 1954). Comparable Arctic haddock girth measurements are not available.

3. Redfish. The calculated selection factors for covered double manila hauls range from 2.2 to 3.2. In respect of this wide variation the present experiment is in agreement with previous experiments elsewhere.

The results obtained by ANTON DOHRN, when hauls are grouped according to total cod-end catch sizes above and below 500 kg, indicate lower selectivity with higher catches. The data tend to support the earlier observations (ICES, 1963) that there is an increase in selection factor with mesh size.

The selection ranges were difficult to derive in most cases, but reliable estimates indicate a selection range of about 16 cm.

Selection factors obtained for cod-ends of polyamide materials

lie within the upper part of the range of selection factors for double manila. However, within-ship comparisons indicate no difference between polyamide and manila. It is noted that the selection factors greater than 3.0 were all obtained from the area SW Iceland while the values lower than this were obtained from W and N Iceland, but this could well be an experimental effect.

Redfish meshed in the cod-end were recorded separately on ANTON DOHRN and GONCHAROV. In ANTON DOHRN hauls, appreciable meshing (more than 5% meshed at any centimetre length) was confined to a length range extending over 12-15 cm. On plotting smoothed percentage meshed against length it was seen that, in the two manila cod-ends, at any centimetre length, the meshed proportion of the fish held by the cod-end rose to about 26% and 15% respectively, being above 10% over a length range of 6-11 cm. In the two perlon cod-ends, the proportion meshed reached 20% and 30% respectively, and the length range of more than 10% meshed was 9 cm. In the case of GONCHAROV the meshing size range extended over 20 cm. Over 6 cm of this range about 50% of the fish held by the codend were meshed, and over much of the remainder of the range over 20% were meshed. In the case of ANTON DOHRN the length range where most fish were meshed was in the upper part of the trawl cod-end selection range while in GONCHAROV it extended over almost all of the selection range. ANTON DOHRN, per haul, caught larger numbers of fish in the selection range than did GONCHAROV. The pattern of meshing in the cod-end was similar to that of gill-net selection.

#### Comment

In these experiments a considerable amount of fishing time was devoted by A. T. CAMERON and ERNEST HOLT, and rather less by MARIA JULIA, to measuring selectivity by the alternate and paired haul technique. By considering hauls within ships the data from all three ships could be treated as for alternate hauls; by considering hauls of A. T. CAMERON and ERNEST HOLT together they could be treated as for paired hauls since it was arranged that while one ship was using big mesh the other was using small mesh. Yet the results achieved were some of the least satisfactory in a series of experiments which yielded quite a lot of rather uncertain results. The fundamental reason for this was that the length distribution and quantities of fish from place to place at quite short distances and even on one ground between different times varied very markedly. This meant that the alternate hauls were almost useless while the paired hauls were rather better yet to give clear results needed many more hauls than were possible. Plotting of selection curves and interpretation of even approximate 50% points was so unsure that it was thought best not to include suggested results from alternate hauls in the report table.

A feature of the selection curves plotted for the Iceland mesh experiments, and one also of the Barents Sea selection curves earlier (ICES, 1963), was that very frequently they did not smoothly approach the zero retained level, but rather there was a band of cm lengths where the percentage retained would have been expected to be near zero but where it was in fact around the 25% retained level. This may be a masking effect, but due not so much to the cover as to other fish in the catch. It would therefore be expected to be a real occurrence rather than an experimental artefact.

#### References

- I.C.E.S., 1963. Mesh Selection Working Group. Coop. Res. Rep. No. 2.

- Margetts, A. R. (1957) The length-girth relationships in whiting and cod and their application to mesh selection. I.C.E.S., Journ. du Conseil, 23 (1): 64-71.
- Margetts, A. R. (1954) The length-girth relationships in haddock and whiting and their application to mesh selection. I.C.E.S., Journ. du Conseil, 20 (1): 56-61.

oooOooo



## SPECIES: COD

Ship	Gear	Date	Locality	Material	Runnage m/kg	Method	Mesh size (mm)		5% length
							mean	range	
A. T. Cameron		24-25/7 62	N. Iceland	D. Manila		Cover	120 <sup>+) )</sup>	129-146	25.0
Anton Dohrn		9-14/7 62	N. + NW. Iceland	D. Manila	163	Cover	138	99-123	±0.2
Explorer		16-20/6 62	N. Iceland	D. Manila		Cover	112	113-163	27.5
		22-25/6 62	N. Iceland	D. Manila		Cover	127	119-149	±0.1
		21-22/6 62	N. Iceland	D. Manila		Cover	132	122-155	±2.9 ?
Goncharov		28/7 62	N. Iceland	D. Manila		Cover	141 <sup>+) )</sup>	113-143	49.0
Ernest Holt		24-25/7 62	N. Iceland	D. Manila		Cover	132	104-134	27.5 ?
María Julia		26-27/7 62	N. Iceland	D. Manila		Cover	117	117-153	33.0
		25/7 and 12-13/8 62	N. + NW. Iceland	D. Manila		Cover	138		47.0
A. T. Cameron		20-21/7 62	NW. Iceland	D. Manila		Paired	120 <sup>+) )</sup>		32 ?
Ernest Holt		26-27/7 62	N. Iceland	D. Manila		Paired	132	113-143	42 ?
María Julia		23-27/7 62	N. Iceland	D. Manila		Alternate	97	92-113	32.5 ?
Explorer		18-21/6 62	N. Iceland	D. Nylon		Cover	89	80-95	31.0 ?
Goncharov		27/7 62	N. Iceland	D. Capron		Cover	125 <sup>+) )</sup>	111-141	±1.7
		29-30/7 62	N. Iceland	D. Capron <sup>x)</sup>		Cover	108 <sup>+) )</sup>	102-119	±4.0
		28-29/7 62	N. Iceland	D. Capron <sup>x)</sup>		Cover	126 <sup>+) )</sup>	113-150	41.5

x) with topside chafers (ICNAF type)

+) not corrected to ICES gauge.

Sel. range (cm)	No. of hauls	Av. duration of tow (min.)	Towing speed (knots)	Average per haul		Total of all hauls	
				Tot. weight of catch (kg)	Cr.	No. of fish in S.R.	Cr.
11	9	60	3.5	2447	268	2880	1860
12	17	84	4.0	555	160	500	380
8	7	60	4	366	132	180	170
16	8	60	4	674	177	330	370
18	3	60	4	552	309	60	90
12	5	90	3.5	1451	844	340	370
16 ?	6	60	3.5	2640	310	3240	2000
12	6	60	3.5	-	-	110	110
16	12	60	3.5	-	-	660	920
12 ?	8	60	3.5	628	-	380	-
8 ?	4	60	3.5	755	-	340	-
8 ?	10	54	3.5	-	-	95	-
8 ?	5	60	4	475	56	20	40
13	5	80	3.5	1144	119	440	320
7	3	80	3.5	1364	489	330	390
13	5	85	3.5	1526	501	700	640

TABLE 3

## SPECIES: HADDOCK

Ship	Gear	Date	Locality	Material	Runpage m/kg	Method	Mesh size (mm)			5% length
							mean	range	s. e. of mean	
A. T. Cameron		24-25/7 62	N. Iceland	D. Manila		Cover	120 <sup>+</sup>		35.5	
Anton Dohrn		9-14/7 62	N. & NW. Iceland	D. Manila	163	Cover	138	129-146	42.2	
Explorer		16-20/6 62	N. Iceland	D. Manila		Cover	112	99-123	35.6	
		22-25/6 62	N. Iceland	D. Manila		Cover	127	113-143	41.6	
Goncharov		28/7 62	N. Iceland	D. Manila		Cover	141 <sup>+</sup>	122-155	50.0	
Ernest Holt		24-25/7 62	N. Iceland	D. Manila		Cover	132	113-143	46.0	
María Julia		24-27/7 62	N. Iceland	D. Manila		Cover	117	104-134	39.0	
		28/3-1/4 62	SW. Iceland	D. Manila		Cover	126		42.4	
		6-17/8 62	S. & SW. Iceland	D. Manila		Cover	138	119-153	48.0	
		25/7 and 12-13/8 62	N. & NW. Iceland	D. Manila		Cover	138	117-153	49.6	
F. O. Sars		10-11/5 62	SW. Iceland	D. Manila		Cover	98	87-112	31.0	
		10+13/5 62	S. & SW. Iceland	D. Manila		Cover	99	92-109	35.4 ?	
		12/5 62	SW. Iceland	D. Manila		Cover	103	91-119	34.0 ?	
		10+13/5 62	S. & SW. Iceland	D. Manila		Cover	104	91-124	36.2	
		10-11/5 62	SW. Iceland	D. Manila		Cover	120	102-134	38.8	
		12-13/5 62	SW. Iceland	D. Manila		Cover	122	107-138	41.2	
Explorer		18-21/6 62	N. Iceland	D. Nylon		Cover	89	80-95	32.1	
Goncharov		27/7 62	N. Iceland	D. Capron <sup>x)</sup>		Cover	125 <sup>+</sup>	111-145	43.3	
		29-30/7 62	N. Iceland	D. Capron <sup>x)</sup>		Cover	108 <sup>+</sup>	102-118	36.7 ?	
		28-29/7 62	N. Iceland	D. Capron <sup>x)</sup>		Cover	126 <sup>+</sup>	113-150	42.5	

x) with topside chafers (ICNAF type).

not corrected to ICES gauge.

Sel. factor	Sel. range (cm)	No. of hauls	Av. duration of tow (min.)	Towing speed (knots)	Average per haul		Total of all hauls	
					Tot. weight of catch (kg)		No. of fish in S.R.	
					C.E.	Cr.	C.E.	C.E.
3.0	10 ?	9	60	3.5	2447	268	390	
3.1	12	16	85	4	520	150	380	
3.2	9	7	60	4	366	132	300	
3.3	11	8	60	4	674	177	160	
3.5	13	5	97	3.5	1451	844	3360	
3.5	10	11	60	3.5	2640	310	330	
3.3	9	6	60	3.5	-	-	270	
3.4	11	13	56	3.5	-	-	940	
3.5	13	14	60	3.5	-	-	840	
3.6	12	12	60	3.5	-	-	270	
3.2 ?	4 ?	4	48	4.0	2455	85	50	
3.6 ?	5 ?	2	45	3	1100	110	40	
3.3	6 ?	3	25	4	826	192	30	
3.5	5	2	45	4	1818	238	90	
3.2	9	3	41	4	1750	493	440	
3.4	9 ?	2	45	3.5	1575	363	180	
3.6	5	5	60	4	475	56	200	
3.5	11	5	80	3.5	1144	119	100	
3.4 ?	9 ?	3	80	3.5	1364	489	300	
3.4	11 ?	5	85	3.5	1526	501	250	

TABLE 4

SPECIES: REDFISH<sup>x</sup>

Ship	Year	Date	Locality	Material	Runnage m/kg	Method	Mesh size (mm)		50% length
							mean	range	
Anton Dohrn		14-17/7	W. Iceland	D. Manila	163	Cover	129	129-146	39.6
		24-26/7	SW. Iceland	D. Manila	120	Cover	149	140-164	46.9
Explorer		16-20/6	N. Iceland	D. Manila		Cover	112	99-123	24.8 ?
		22-25/6	N. Iceland	D. Manila		Cover	127	113-143	27.5
		21-22/6	N. Iceland	D. Manila		Cover	132	119-149	36.9
Johan Egeert		13/9	SW. Iceland	D. Manila		Cover	108	86-125	35.0 ?
Anton Dohrn		17-20/7	W. Iceland	D. Perlon	210	Cover	132	124-139	38.5
		21-23/7	SW. Iceland	D. Perlon	200	Cover	143	135-150	43.9
Explorer		18-21/6	N. Iceland	D. Nylon		Cover	89	80-95	24.1 ?
Goncharov		5/8	W. Iceland	D. Capron <sup>f</sup>		Cover	118 <sup>f</sup>	107-125	34.2

x of type marinus, except for "Goncharov" which included a small percentage of mentella.

1) with top-side chafer

f mesh size not corrected to ICES gauge

Sel. factor	Sel. range (cm)	No. of hauls	Av. duration of tow (min.)	Towing speed (knots)	Average per haul		Total of all hauls	
					Tot. weight of catch (kg)	Cr.	No. of fish in S. R.	Cr.
2.9	16	11	108	4	435	292	2680	3670
3.1	15 ?	10	174	4	661	665	2000	2700
2.2 ?	7 ?	6	60	4	366	132	50	40
2.2	16	8	60	4	674	177	2280	2000
2.8	15 ?	3	60	4	552	309	500	830
3.2 ?	5 ?	2	75	3	595	185	20	20
2.3	16	17	100	4.0	659	493	8080	12490
3.1	15 ?	7	137	4.0	558	481	1220	1740
2.7 ?	6 ?	3	60	4	475	56	70	60
2.9	8	3	60	3.5	258	240	510	430

TABLE 5

Species Ship Area Date Codend Mean mesh size (mm) Method No. of hauls Haul duration (mins) Average total catch (kg)	Cod "Anton Dohrn" N + NW Iceland 9-14/7/1962 D Manila 138 Cover 17 84 555 160			Cod "A. T. Cameron" Skjalafandi 24-25/7/1962 Manila coveral 120 Cover			Cod "A. T. Cameron" N. Iceland July 1962 D Manila 120 Paired haul 8 60			
	Length (cm)	C.E.	Cov.	%	C.E.	Cov.	%	A.T.C. 120 mm	E.H. 75 mm	120 mm 75 m %
20					2					
21					2				1	
22					6					
23			0.0		13			1	1	100
24	1	4	20.0	4	24	14			1	
25	3	13	18.8	3	47	6	1	10	10	
26	5	10	33.3	13	91	12	4	9	44	
27	6	18	25.0	23	138	14	12	26	46	
28	15	34	30.6	30	138	18	13	27	48	
29	8	36	18.2	29	154	16	19	52	37	
30	5	33	13.2	48	127	27	38	77	49	
31	4	19	17.4	64	134	32	25	85	29	
32	11	12	47.8	59	109	35	31	62	50	
33	3	14	17.6	74	103	42	28	62	45	
34	6	18	25.0	88	122	42	36	61	59	
35	8	22	26.7	137	130	51	52	55	95	
36	13	30	30.2	194	166	54	55	73	75	
37	17	29	37.0	326	206	61	68	92	74	
38	28	42	40.0	464	219	68	93	103	90	
39	34	39	46.6	622	264	70	132	130	102	
40	40	47	46.0	803	278	74	175	163	107	
41	48	39	55.2	891	315	74	197	173	114	
42	55	47	53.9	949	250	79	185	194	95	
43	76	30	71.7	917	226	80	197	204	97	
44	75	30	71.4	854	165	84	187	188	99	
45	62	29	68.1	700	101	87	161	167	96	
46	45	11	80.4	666	66	91	149	144	103	
47	57	13	81.4	644	45	93	118	122	97	
48	57	10	85.1	466	43	92	91	107	85	
49	65	11	85.5	457	18	96	85	80	106	
50	66	12	84.6	321	6	98	65	71	92	
51	79	5	94.0	297	15	95	63	57	111	
52	79	7	91.9	294	14	95	57	50	114	
53	70	7	90.9	250	4	98	56	43	130	
54	108	8	93.1	233	3	99	69	40	172	
55	90	13	87.4	212	4	98	41	42	98	
56	120	7	94.5	205	2	99	37	43	86	
57	100	6	94.3	199	2	99	44	33	133	
58	117	7	94.4	190	3	98	39	35	111	
59	115	4	96.6	149	1	99	34	40	85	
60	84	3	96.6	132		100	40	38		
61	76	4	95.0	125		100	31	31		
62	66	-	100.0	171	2	99	29	22		
63	55	2	96.5	133		100	30	21		
64	48	2	96.0	109		100	19	15		
65	38		100.0	85		100	22	14		
66	36		100.0	93		100	18	9		
67	39		100.0	76		100	12	9		
68	32		100.0	28		100	14	8		
69	32		100.0	52		100	11	9		
≥ 70	573		100.0	339		100	137	91		
TOTAL	2770	728		13218	3758		3021			
50% Length cm	40.2				35					
Selection Range cm	12									
Selection Factor	2.9				2.9					

TABLE 5 (Cont'd.)

Species Ship Area Date Codend Mean mesh size (mm) Method No. of hauls Haul duration (mins) Av. total catch (kg)	Cod "Ernest Holt" Skjalafandi 24-25/7/1962 Manila coveral 132 Cover			Cod "Ernest Holt" N. Iceland July 1962 D. Manila 132 Paired haul 4 60			Cod "Explorer" Iceland D. Manila 112.2 Cover 7			
	Length (cm)	C.E.	Cov.	%	E.H. 132 mm	A.T.C. 50 mm	132x2% 50 mm	C.E.	Cov.	%
< 20										
21									3	
22									4	
23									16	0
24								3	41	7
25	2	1	100					3	34	8
26	2	1	67					6	66	8
27	4	5	44					7	52	12
28	16	11	59					5	43	10
29	2	28	7					6	33	15
30	12	33	27					3	35	8
31	18	45	29			< 30	61	8	21	28
32	20	45	31				16	3	21	12
33	34	52	40				14	3	14	22
34	42	47	47				13	4	14	22
35	32	54	37		1		14	16	18	47
36	38	61	38		3	24	8	12	15	44
37	94	92	51		7	32	19	14	25	36
38	180	139	56		17	47	30	21	27	44
39	216	179	55		12	74	46	28	31	47
40	316	172	65		12	99	24	27	16	63
41	384	224	63		21	143	29	34	15	69
42	458	268	63		32	177	36	27	10	73
43	474	223	68		41	185	44	28	6	82
44	520	180	74		66	183	72	31	3	91
45	466	170	73		70	206	68	19	-	100
46	448	145	76		84	173	97	14	2	88
47	432	110	80		82	179	92	7	-	100
48	386	82	82		72	167	86	7	1	88
49	302	77	80		45	136	66	9		100
50	292	52	85		62	127	98	12		
51	262	47	85		49	140	70	10		
52	302	23	93		47	112	84	6		
53	292	35	89		65	99	131	8		
54	322	14	96		54	113	96	7		
55	330	10	97		46	90	102	1		
56	296	10	97		44	95	93	5		
57	266	7	97		53	94	113	4		
58	242	10	96		31	87	71	5		
59	268	4	98		42	106	79	6		
60	198	5	98		44	94	94	3		
61	298	3	99		45	76	118	60 cm	63	
62	272	1	100		24	95	51			
63	246	2	99		20	74	54			
64	180	2	99		32	65	98			
65	142	3	98		29	47	123			
66	104		100		8	49	33			
67	126	4	99		9	49	37			
68	60		100		12	33	73			
69	66		100		7	21	67			
≥ 70	482		100		10	24	83			
TOTAL	9946	2673			1365	3764		472	552	
50% Length cm	38.5							37.6		
Sel. range cm								8		
Sel. factor	3.0							3.4		



TABLE 5 (Cont.d.)

SPECIES Ship Area Date Codend Mean mesh size (mm) Method No. of hauls Haul duration (mins) Av. total catch (kg)	Cod "Explorer" Iceland  D. Manila 126.8  8			Cod "Explorer" Iceland  D. Manila 131.6  3			Cod "Explorer" Iceland  D. Nylon 89.1  5			
	Length (cm)	C.E.	Cov.	%	C.E.	Cov.	%	C.E.	Cov.	%
≤ 20			1							
21			1						1	
22		2	11			1			3	
23		4	7			7			1	
24		2	16			4	0		6	0
25		12	22		2	3	40		4	33
26		10	25		3	10	23		6	33
27		6	26		2	4	33		11	8
28		7	31		2	5	29		4	50
29		7	21		1	7	12		5	38
30		7	27		4	6	40		8	60
31		6	20		2	5	29		2	33
32		3	6		-	4	0		6	
33		9	7		1	3	25		4	
34		8	18		2	5	29		-	0
35		13	28		3	4	43		3	50
36		15	25		2	4	33		3	93
37		14	37		-	7	0		1	67
38		27	35		7	7	50		4	91
39		21	31		-	4	0		1	88
40		42	41		5	11	31		1	88
41		32	34		2	9	18		7	88
42		33	21		5	9	36		1	100
43		30	16		2	4	33		6	
44		36	9		6	3	67		1	
45		30	12		4	4	50		4	
46		14	12		5	2	71		1	
47		17	4		4	2	67		4	
48		27	3		6	3	67		1	
49		28	2		6	2	75		4	
50		32	9		9	2	82		1	
51		36	2		13	1	93		2	
52		37	1		15	2	88		3	
53		32	-	100	5	1	83		7	
54		38	3	93	10	1	91		1	
55		33	1	97	17	2	89		3	
56		31	-	100	15	-	100		6	
57		31	-	100	17				5	
58		31	1	97	8				7	
59		≥ 60 cm	20	-	100	12			5	
60		371			204				150	
61										
62										
63										
64										
65										
66										
67										
68										
69										
≥ 70										
TOTAL		1154	566		401	150		304	69	
50% Length cm			40.4			42.9?			31.0?	
Sel. range cm			16			18			8?	
Sel. factor			3.2			3.3?			3.5?	

TABLE 5 (Cont'd.)

Species Ship Area Date Codend Mean mesh size (mm) Method No. of hauls Haul duration (mins) Average total catch (kg)	Cod "Goncharov" N. Iceland (8) 28.7.1962 D. Manila 141 Cover 5 97 1451			Cod "Goncharov" N. Iceland (8) 27.7.1962 D. Capron 125 Cover 5 80 1144			Cod "Goncharov" N. Iceland (8) 29-30/7/1962 D. Capron with chafor 108 Cover 3 80 1364					
	Length (cm)	C.E.	Cov.	%	C.E.	Cov.	%	C.E.	Cov.	%		
≤ 20												
21												
22												
23												
24												
25												
26												
27												
28												
29	≤				≤			≤				
30	30cm	27	604	4	30 cm	2	51	4	30 cm	23	509	4
31		2	54	4			1			2	39	5
32		5	55	8			3	25		3	41	7
33		2	29	6			6			2	29	4
34		3	46	6			4	20		1	21	5
35		18	52	26			4			15	31	33
36		1	49	2			4			10	27	27
37			41				2	20		5	32	14
38		6	46	12			4	10	29	7	25	22
39		10	65	13			6	11	35	26	50	34
40		38	80	32			14	29	33	53	107	33
41		11	57	16			9	22	29	23	53	30
42		23	58	28			20	28	42	36	55	40
43		12	40	23			26	30	46	46	48	49
44		27	47	36			27	26	51	29	37	44
45		39	55	41			40	35	53	78	31	72
46		26	50	34			38	36	51	38	12	76
47		58	14	81			48	22	69	54	5	92
48		13	21	38			33	22	61	27	6	82
49		13	14	48			32	18	64	45	1	98
50		35	21	62			64	22	74	91	4	96
51		26	9	74			33	13	72	28	3	90
52		22	21	52			47	7	87	30		100
53		22	7	76			41	7	86	18		100
54		31	14	69			43	12	78	23		100
55		61	15	80			83	10	89	69	1	99
56		58	10	85			62	10	86	55		100
57		71	8	90			81	8	91	48	1	98
58		56	6	90			60	10	86	51		100
59		52	2	96			46	3	94	22		100
60		100	4	96			157	10	94	81		100
61		87	6	94			87	4	96	51		100
62		68	2	97			115	7	94	57		100
63		53		100			80	3	96	34		100
64		61	3	95			88	2	98	35		100
65		95	3	97			139	3	98	74		100
66		43		100			83		100	32		100
67		79	1	99			85	2	98	27		100
68		59	2	97			73	1	99	34		100
69		39		100			60	2	97	12		100
> 70		536	2	100			589	3	99	201		100
TOTAL		1988	1613				2419	509		1613	1068	
50% Length cm			49				44.7			44.0		
SEL. range cm			12				13			7		
Selection factor			3.4				3.6			4.1		

TABLE 5 (Cont'd.)

Species Ship Area Date Codend Mean mesh size (mm) Method No. of hauls Haul duration (mins) Av. total catch (kg)	Cod "Goncharov" N. Iceland (8) 28-29/7/1962 D Capron w. chafer 126 Cover 5 85 1526			Cod "Maria Julia" N. Iceland 24-27/7/62 D. Manila 117 Cover 6 60			Cod "Maria Julia" N & NW Iceland 25/7&12-13/8/62 D. Manila 138 Cover 12 60			Cod "Maria Julia" N. Iceland July 1962 D. Manila 97 Alternate haul 10 54			
	Length (cm)	C.E.	Cov.	%	C.E.	Cov.	%	C.E.	Cov.	%	97 mm C.E.	61 mm C.E.	97 % ... x 1.4
≤ 20				1	1	50						7	
21					1								
22					1								
23					1			1	0			1	
24					2			1	0	1			
25					1			1	50			5	
26								3	0	1		3	24
27				1	5	17		6	0			10	
28				3	7	30	2	9	18	1		12	6
29				1	11	8	2	2	50	2		6	24
30	≤ 30cm	141	672	17	5	10	33	2	15	12	1	7	10
31		4	40	9	2	10	17	3	19	14	2	7	20
32		2	43	4	2	5	29	6	17	26		8	
33		7	20	26	2	7	22	2	29	6		3	
34		9	30	23	2	13	13	4	23	15	1	6	12
35		13	50	21	4	9	31	10	18	36	3	7	31
36		19	35	35	4	3	57	2	36	5	5	9	40
37		17	45	27	5	7	42	14	33	30	5	9	40
38		18	42	30	9	8	53	18	61	23	7	11	45
39		31	24	56	8	11	42	36	69	34	8	13	44
40		87	90	49	17	20	46	48	108	31	12	11	78
41		46	66	41	15	11	58	48	109	31	26	25	74
42		63	48	57	22	5	81	54	136	28	30	23	93
43		56	41	58	11	8	58	54	104	34	27	16	121
44		66	42	61	11	7	61	54	79	41	31	15	148
45		100	65	61	13	5	72	45	62	42	28	22	91
46		86	39	69	15	6	71	43	45	49	17	15	81
47		46	31	60	17	2	89	45	44	51	25	17	105
48		50	20	71	9	5	64	48	36	57	25	15	119
49		77	17	82	10	1	91	42	34	55	6	10	43
50		76	21	78	6	1	86	34	29	54	18	17	76
51		68	9	88	10			27	12	69	11	17	46
52		47	10	82	7	1	88	36	17	68	17	14	87
53		71	4	95	7			20	13	61	17	14	87
54		80	4	95	7			21	14	60	10	11	65
55		66	12	85	9			27	8	77	20	7	20
56		66	4	94	4			24	3	89	14	12	83
57		69	3	96	4			32	6	84	10	14	51
58		63	5	93	3			27	10	73	16	8	143
59		70	1	99	7			27	6	82	22	10	157
60		134	3	98	7			33	4	89	13	7	133
61		90		100	1			32	3	91	17	4	304
62		86	1	99	4			26	3	90	9	12	54
63		93		100	1			27		100	5	9	40
64		93		100	6			26	1	96	13	7	133
65		86		100	6			24	1	96	20	10	143
66		79	1	99	2			24			13	8	116
67		62		100	1			25			7	2	250
68		61		100				15			8	4	143
69		70		100	2			13			4	3	95
≥ 70		528		100				161			45	20	161
TOTAL		2997	1538		287	184		1264	1230		573	503	
50% Length cm			41.5			39.0			47.0				
Sel. range cm			13			12			16				
Selection factor			3.3			3.5			3.4				

Table 6 (contd)

Species	Haddock			Haddock			Haddock			Haddock		
Ship	EXPLORER			EXPLORER			G. O. SARS			G. O. SARS		
Area	Iceland			Iceland			S&SW Iceland			SW Iceland		
Date	Iceland			Iceland			10 & 13/5/62			10-11/5/62		
Cod-end	D. Manila			D. Nylon			D. Manila			D. Manila		
Mean mesh size(mm)	126.8			89.1			104			120		
Method	Cover			Cover			Cover			Cover		
No. of hauls	8			5			2			3		
Haul duration (min)	8			5			45			41		
Average total catch kg	8			5			1818			1750		
Length cm	CE	Cov	%	CE	Cov	%	CE	Cov	%	CE	Cov	%
< 20	4	85	4		2	0		7	0	1	15	6
21	-	1	0	1	2	33		3	0		2	0
22	2		22	1	9	10		5	0		1	0
23	3	17	15	4	24	14		4	0		1	0
24	12	53	18	7	39	15						
25	24	108	18	9	96	9						
26	42	169	20	28	150	16					1	14
27	59	264	18	29	175	14				5	6	0
28	56	261	18	43	156	22		3	0	17	14	18
29	48	246	16	52	163	24	1	6	14	13	12	20
30	52	161	24	36	103	26	1	7	12	2	18	10
31	31	108	22	38	48	44	2	10	17	6	14	30
32	13	65	17	39	24	62		13	0	2	9	18
33	6	19	24	18	13	58	1	10	9	1	10	9
34	2	13	13	12	6	67	2	9	18	3	2	60
35	5	15	25	9	-	100	4	7	36	4	8	33
36	5	11	31	12	-	100	7	4	64	9	23	28
37	8	9	47	21	2	91	13	8	62	27	33	45
38	11	35	24	19	-	100	24	14	63	37	31	54
39	15	25	38	25			40	15	73	49	50	49
40	23	26	47	19			67	15	82	80	71	53
41	17	17	50	24			95	10	90	81	64	56
42	20	19	51	15			116	15	89	119	57	68
43	22	7	76	12			134	8	94	129	57	69
44	12	8	60	8			103	5	95	108	26	81
45	7	7	50	3			103	3	97	88	23	79
46	13	4	76	7			90	3	97	63	17	79
47	10	3	77	1			58		100	51	2	96
48	13	2	87	2			43			36	2	95
49	8	-	100	2			28			23	2	92
50	14	-	100	3			32			23	1	96
51	27	1	96	4			19			14		100
52	35	-	100	2			17			20		
53	35	-	100	3			14			8		
54	51	1	98	4			16			6		
55	63	-	100	3			12			5		
56	81			1			8			5		
57	86			3			8			1		
58	95			3			4			1		
59	86			7			4			1		
60	376			8			6			2		
61				all			2			1		
62							5			1		
63							2			2		
64							1					
65												
66												
67												
68							1					
69												
70												
Total	1422	1767		537	1012		1083	1891		1009	572	
50% Ret. length(cm)		41.6			32.1			36.2			38.8	
Selection range(cm)		11			5			5			9	
Selection factor		3.3			3.6			3.5			3.2	

Table 6

Species	Haddock			Haddock			Haddock			Haddock		
Ship	ANTON DOHRN			A. T. CAMERON			E. HOLT			EXPLORER		
Area	N & NW Iceland			Skjalafandi			Skjalafandi			Iceland		
Date	9-14/7 1962			24-25/7/62			24-25/7/62					
Cod-end	D. Manila			Manila coveral			Manila coveral			D. Manila		
Mean mesh size(mm)	138			120			132			112.2		
Method	Cover			Cover			Cover			Cover		
No. of Hauls	16									7		
Haul duration (min)	83											
Average total catch kg	520 150											
* Length cm	CE	Cov	%	CE	Cov	%	CE	Cov	%	CE	Cov	%
20				2	99	2				2	8	20
21				1	8	11				-	20	0
22				1	3	25				2	68	3
23		3	0.0							11	183	6
24		5	0.0	3	7	30				29	328	8
25	1	37	3	12	35	26				34	409	8
26	6	52	10	31	89	26				59	488	11
27	11	109	9	37	157	19		5	0	71	500	12
28	23	138	14	69	212	25	1	4	20	85	455	16
29	19	154	11	90	226	28	1	14	7	92	312	23
30	20	145	12	76	154	33	1	22	4	69	231	23
31	8	103	7	53	101	34	3	19	14	72	150	32
32	13	87	13	32	62	34	1	14	7	38	98	28
33	12	58	17	20	28	42		7	0	36	48	43
34	6	40	13	8	21	28		9	0	8	10	44
35	3	25	11	4	10	29		4	0	16	14	53
36	6	10	38	9	9	50		1	0	11	13	46
37	6	14	30	25	7	78	1	3	25	20	14	59
38	7	11	39	42	17	71	1	11	8	32	22	59
39	14	21	40	65	18	78	3	16	16	59	19	76
40	18	43	30	112	20	85	9	36	20	56	15	79
41	30	39	44	137	24	85	13	26	33	41	6	87
42	53	53	50	122	22	85	29	41	41	42	3	93
43	67	39	63	157	19	89	32	68	32	47	-	100
44	57	49	54	125	18	87	39	52	43	29	2	94
45	52	36	59	96	10	91	38	58	40	19	-	100
46	22	16	58	86	3	97	34	31	52	19	-	
47	36	9	80	75	1	99	28	20	58	26		
48	27	8	77	82	4	95	26	24	52	21		
49	32	12	73	94	4	96	30	12	71	31		
50	51	8	86	127		100	29	13	69	32		
51	54	8	87	154	2	99	37	10	79	29		
52	62	9	87	176	1	99	45	11	80	27		
53	71	11	87	190		100	47	10	82	29		
54	93	9	91	219	2	99	72	9	89	43		
55	93	8	92	212	1	100	126	4	97	37		
56	96	2	90	181	1	99	111	7	94	59		
57	129	4	97	142		100	127	4	97	46		
58	90	4	96	124		"	110	5	96	61		
59	90	-	100	94		"	93	2	98	41		
60	60	1	98	69		"	68	2	97	60	266	
61	51	1	98	42		"	62	1	98			
62	53		100	31		"	48	1	98			
63	32		100	30		"	28		100			
64	24		100	16		"	26		"			
65	14		100	16		"	15		"			
66	21		100	8		"	12	1	92			
67	11		100	10		"	11		100			
68	4		100	8		"	14		"			
69	11		100	6		"	7		"			
70	15		100	17		"	25		"			
Total	1674	1381		3538	1395		1403	577		1747	3416	
50% Ret. length (cm)		42.2			35.7 - 36.7			4.6			35.6	
Selection range (cm)		12									9	
Selection factor		3.1			3.07			3.6			3.2	

Table 6 (contd)

Species	Haddock			Haddock			Haddock			Haddock			
Ship	G. O. SARS			G. O. SARS			G. O. SARS			GONCHAROV			
Area	SW Iceland			SW Iceland			S & SW Iceland			N. Iceland (8)			
Date	12-13/5/62			12/5/62			12-13/5/62			28/7/62			
Cod-end	D. Manila			D. Manila			D. Manila			D. Manila			
Mean mesh size (mm)	122			103			99			141			
Method	Cover			Cover			Cover			Cover			
No. of Hauls	2			3			2			5			
Haul duration(min)	45			25			45			97			
Average total catch kg	1575			825			1100			1451			
< Length cm	CE	Cov	%	CE	Cov	%	CE	Cov	%	CE	Cov	%	
20	15	345	4	1	104	1	1	367	0.3				
21	3	11	21		21	0		49	0				
22		6	0		5	0		17	0				
23		11	0		2	0		8	0				
24		4	0					7	0				
25								1	0				
26				1	1	50							
27		2	0					2	0				
28		5	0		3	0		3	0				
29		9	0	2	7	22	1	10	9				
30	2	7	22	1	17	6	3	12	20	< 30 cm	42	1260	4
31	3	19	14	8	21	28	10	24	29		1	69	1
32	4	12	25	12	27	31	8	27	23		7	68	9
33	1	15	6	9	21	30	10	28	26		1	21	5
34	1	8	11	8	13	38	10	15	40		4	51	7
35	3	5	38	4	1	80	5	3	62		2	62	3
36		2	0	5	1	83	5		100			68	
37	2	8	20	3	1	75	1	1	50		20	79	20
38	1	4	20	2		100	13		100		16	112	12
39	3	11	21	4	1	80	18	1	95		31	160	16
40	12	10	55	14	4	78	27		100		73	356	17
41	10	8	56	14	2	88	30		"		47	210	18
42	20	23	47	12	2	86	46		"		87	215	29
43	25	16	61	19	2	90	64		"		44	169	21
44	30	12	71	19		100	47		"		69	147	32
45	36	16	69	32		"	50		"		80	167	23
46	43	12	78	38	1	97	38		"		103	173	37
47	35	14	71	37	1	97	32		"		96	180	35
48	43	3	93	34		100	28		"		141	176	44
49	46	3	94	40		"	21		"		146	161	48
50	55	3	95	49		"	20		"		312	316	50
51	54	3	95	33		"	14		"		288	179	62
52	62	2	97	41		"	15		"		369	212	54
53	60	2	97	40		"	19		"		438	168	72
54	53	1	98	34		"	13		"		427	20	68
55	46	1	98	33		"	14		"		852	276	76
56	40		100	29		"	15		"		562	137	80
57	27		100	23		"	11		"		510	91	85
58	42	1	98	13		"	10		"		328	60	85
59	17		100	11		"	7		"		195	42	82
60	19			20		"	10		"		255	36	88
61	13			13		"	5		"		118	7	94
62	12			5		"	7		"		81	6	93
63	10			9		"	7		"		58	5	92
64	8			10		"	5		"		32	4	89
65	9			4		"	3		"		34	6	85
66	8			2		"	1		"		14		100
67	2			3		"	2		"		15		"
68	4			5		"	1		"		12		"
69	4			2		"	2		"		19		"
70	3			4		"	1		"		28		"
Total	885	616		702	258		650	575		5967	5751		
50% Ret. Length(cm)		41.2			34			35.4			50		
Selection range(cm)		9?			6?			5?			13		
Selection factor		3.4			3.3?			3.6?			3.5		

Table 6 (contd)

Species Ship Area Date Cod-end Mean mesh size (mm) Method No. of Hauls Haul duration (min) Average total catch kg	Haddock GONCHAROV N. Iceland (8) 27/7/62 D. Capron 125 Cover 5 80 1144			Haddock GONCHAROV N. Iceland (8) 28-30/7/62 D. Capron with chafer 108 Cover 3 80 1364			Haddock GONCHAROV N. Iceland 28-29/7/62 D. Capron with chafer 126 Cover 5 85 1526					
Length cm	CE	Cov	%	CE	Cov	%	CE	Cov	%			
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30	≤ 30	3	69	4	≤ 30	10	665	1	≤ 30	148	54.8	21
31	cm	1	22	4		2	26	7			18	0
32			4			1	11	8		1	16	6
33		1	12	8		6	6	50		1	6	14
34			13			3	4	43			5	0
35			4			12	12	50		3	7	30
36		1	1	50		5	15	25		3	5	38
37		1	4	20		21	19	52		3	20	13
38		4	8	33		32	30	52		6	16	27
39		6	3	67		53	19	74		10	19	34
40		5	10	33		72	57	56		14	29	33
41		4	6	40		51	26	66		26	30	46
42		5	6	46		52	28	65		37	32	54
43		7	5	58		46	11	81		15	23	39
44		4	3	57		100	9	92		24	16	60
45		16	10	62		129	11	92		37	21	64
46		11	10	52		81	11	88		41	14	75
47		20	5	80		105	8	93		34	17	67
48		14	4	78		78	5	94		56	13	81
49		8	5	62		124		100		39	6	87
50		52	5	91		207	3	99		119	10	92
51		23		100		108		100		101	4	96
52		56	3	95		133		100		129	6	96
53		48	1	98		173	1	99		169	1	99
54		72		100		198	1	99		196	6	97
55		132	4	97		281	1	100		260	2	99
56		57		100		152	1	99		242	1	100
57		85		100		139	2	99		222		100
58		42	1	98		96		100		140	1	99
59		24	1	96		59		100		130		99
60		51	1	98		34		100		65		99
61		17		100		18		100		28		99
62		10		100		23		100		34		99
63		4		100		14		100		19		99
64		7	1	88		7		100		15		99
65		14		100		8		100		20		99
66		5		100		4		100		10		99
67		2		100		9		100		5		99
68		5		100		2		100		3		99
69		3		100		2		100		1		99
70		3		100		6		100		9		99
Total	823	221			1676	982				2425	892	
50% Ret. Length (cm)		45.3				36.7				42.5		
Selection Range (cm)		11				9				11		
Selection Factor		3.5				3.4				3.4		

Table 6 (contd)

Species	Haddock			Haddock			Haddock			Haddock		
Ship	MARIA JULIA			MARIA JULIA			MARIA JULIA			MARIA JULIA		
Area	SW Iceland			N Iceland			N & NW Iceland			S & SW Iceland		
Date	28/3-1/4/62			24-27/7/62			25/7 & 12-13/8/62			6-17/8/62		
Cod-end	D. Manila			D. Manila			D. Manila			D. Manila		
Mean mesh size (mm)	126			117			138			138		
Method	Cover			Cover			Cover			Cover		
No. of Hauls	13			6			12			14		
Haul duration (min)	56			60			60			60		
Average total catch	kg			kg			kg			kg		
Length cm	CE	Cov	%	CE	Cov	%	CE	Cov	%	CE	Cov	%
20				1	2	33					1	
21										2		
22								2	0	3	13	19
23					1			1	0	6	37	14
24				1						16	88	15
25				2	7	22		7	0	9	77	10
26				3	21	13		1	12	8	15	17
27				5	49	9		2	40	5	3	5
28		1		9	81	10		2	60	3	2	7
29	1			8	102	7		10	66	13	5	33
30	1	6	14	9	120	7		10	108	8		0
31		7	0	17	82	17		4	87	4	3	7
32		10	0	11	72	13		3	69	4	6	7
33		12	0	6	54	10		3	32	9	9	9
34	1	7	13	10	26	28		1	25	4	17	11
35	2	7	22	2	16	11		1	20	5	22	13
36	4	9	31	5	8	38			18	0	25	16
37	7	17	29	6	6	50		2	7	22	21	15
38	18	43	30	5	11	31		2	11	15	22	22
39	31	76	29	10	16	38		1	10	9	14	24
40	56	127	31	29	21	58		8	34	19	10	21
41	87	125	41	43	29	60		11	38	22	16	33
42	134	116	54	54	32	63		15	46	25	19	31
43	120	125	49	79	26	75		21	49	30	31	34
44	139	90	61	77	22	78		18	47	28	42	33
45	123	66	65	70	19	79		24	44	35	59	40
46	125	69	64	70	19	79		20	38	34	77	46
47	90	24	79	78	4	92		16	24	40	72	43
48	101	31	77	44	4	92		13	22	37	79	53
49	74	24	76	16	2	89		16	11	59	80	54
50	98	20	83	25	3	89		11	15	42	106	55
51	97	12	89	33	1	97		22	11	67	108	64
52	112	12	90	35				32	11	74	114	71
53	82	6	93	54	3	95		33	22	60	106	71
54	109	5	96	55	4	93		57	10	85	109	77
55	103	3	97	71	1	99		51	19	73	103	82
56	76	3	96	61	1	98		62	17	78	108	85
57	81	2	98	81				46	15	75	89	82
58	45	3	94	65				75	4	95	91	88
59	2	2	96	45				61	6	91	85	89
60	60		100	36				62	6	91	66	94
61	32			18				29	1	97	63	98
62	42			18				30	2	94	54	100
63	16			12				22	1	96	53	96
64	24			13				18			26	96
65	12			4				10			33	
66	13	2	87	5				10			20	
67	12			6				6			12	
68	9			5				5	1	83	7	
69	7			1				1			7	
≥ 70	20			7				14			28	
Total	2216	1062		1290	865		864	1069		2073	2312	
50% Ret. Length (cm)	42.4			39.0			49.6			48.0		
Selection Range (cm)	11			9			12			13		
Selection Factor	3.4			3.3			3.6			3.5		



TABLE 7

Species		Redfish "Anton Dohrn"				Redfish "Anton Dohrn"			
Ship		W. Iceland				S.W. Iceland			
Area		14-17/7/62				24-26/7/62			
Date		D. Manila				D. Manila			
Cod end		139				149			
Mean mesh size (mm)		Cover				Cover			
Method		11				10			
No. of hauls		108				174			
Haul duration (mins)		435				661			
Av. total catch (kg)		292				665			
Length (cm)		C.E.	Cov.	%	Meshed	C.E.	Cov.	%	Meshed
≤ 20	11	14	20						
21	1	4	20						
22	1	7	12						
23	5	9	36						
24	2	24	8						
25	10	42	19						
26	28	61	32						
27	45	95	32						
28	69	147	32						
29	65	179	27						
30	79	212	27	1	2	1	67		
31	115	269	30						
32	134	333	29	1	2	3	40		
33	195	379	34	2	6	6	50		
34	216	361	37	2	8	16	33		
35	201	349	36	5	21	43	33		
36	183	295	33	4	27	64	30	2	
37	200	273	42	6	51	123	29	4	
38	206	258	44	10	69	212	25	5	
39	190	190	50	11	98	216	31	5	
40	186	198	48	10	149	290	34	5	
41	187	148	56	11	139	286	33	5	
42	171	116	60	15	158	278	36	9	
43	162	93	64	8	142	262	35	14	
44	131	71	65	12	125	199	39	13	
45	134	49	73	10	88	138	39	9	
46	135	32	81	24	89	117	43	10	
47	123	30	80	19	148	131	53	23	
48	116	29	83	19	179	137	57	38	
49	150	13	92	12	190	138	58	49	
50	138	6	96	18	199	106	65	54	
51	93	1	99	9	226	88	72	52	
52	84	3	97	5	172	46	79	45	
53	42		100	-	133	25	84	23	
54	24		100	1	77	6	93	14	
55	7		100	-	54	3	95	7	
56	8		100	1	13	1	93	1	
57	5		100		11	1	92	-	
58	1		100		4		100	1	
59	1		100		3		100		
60	17		100		107		100		
61									
62									
63									
64									
65									
66									
67									
68									
69									
≥ 70									
Total	3201	4320		216	2692	2936		388	
50% ret. length (cm)		39.0				46.9			
Selection range (cm)		16				15.7			
Selection Factor		2.9				3.1			

TABLE 7

Species Ship Area Date Cod end Mean mesh size (mm) Method No. of hauls Haul duration (mins) Av. total catch (kg)	Redfish "Explorer" Iceland			Redfish "Explorer" Iceland			Redfish "Explorer" Iceland		
	D. Manila 112.2 Cover 6			D. Manila 126.8 Cover 8			D. Manila 131.6 Cover 3		
Length (cm)	C.E.	Cov.	%	C.E.	Cov.	%	C.E.	Cov.	%
20	2	10	17	31	114	21		10	
21	2	3	40	17	33	34		6	0
22	2	3	40	40	79	34	3	7	30
23	4	4	50	55	103	35	-	4	0
24	8	4	67	81	144	36	9	22	29
25	6	7	46	121	178	40	7	17	29
26	8	6	67	176	180	49	15	27	36
27	8	3	73	254	228	53	21	56	27
28	10	6	62	243	204	54	26	59	31
29	7	5	58	239	215	53	39	90	30
30	4	3	57	267	169	61	33	109	23
31	7	1	88	238	172	58	36	108	25
32	3	-	100	196	104	65	60	93	39
33	4	-	100	152	70	68	56	95	37
34	-	-	-	122	45	73	51	75	40
35	1	1	50	67	30	69	40	42	49
36	5	-	100	65	18	78	39	34	53
37	-	-	-	43	14	75	28	27	51
38	-	-	-	28	7	80	24	23	51
39	-	-	-	18	3	86	21	8	72
40	-	-	-	13	1	93	14	6	70
41	-	-	-	7	-	100	12	4	75
42	-	-	-	6	1	86	8	4	67
43	-	-	-	-	-	-	4	1	80
44	-	-	-	3	1	75	12	-	100
45	-	-	-	-	-	-	6	-	100
46	-	-	-	1	-	100	3	1	75
47	-	-	-	-	-	-	1	-	100
48	-	-	-	1	-	-	4	-	-
49	-	-	-	-	-	-	1	-	-
50	-	-	-	-	-	-	2	-	-
51	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-
60	60	1	-	-	-	-	-	-	-
61	cm	-	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-
Total	82	56		2404	2113		575	928	
50% ret. length (cm)	24.8?			27.5			36.9		
Selection range (cm)	??			16			15?		
Selection factor	2.??			2.2			2.8		

TABLE 7

Species	Redfish "Anton Dohrn"				Redfish "Anton Dohrn"			
Ship	W. Iceland				S.W. Iceland			
Area	17-20/7/62				21-23/7/62			
Date	D. Perlon				D. Perlon			
Cod end	132				142			
Mean mesh size (mm)	Cover				Cover			
Method	17				7			
No. of hauls	100				137			
Haul duration (mins)	659	493			558	481		
Av. total catch (kg)								
Length (cm)	C.E.	Cov.	%	Meshed	C.E.	Cov.	%	Meshed
20	37	60	38					
21	1	11	8					
22	4	14	22					
23	10	21	32					
24	12	49	20					
25	32	71	31					
26	48	147	25					
27	86	267	24					
28	151	408	27					
29	196	599	25					
30	338	904	27	2	4	1	80	
31	455	1049	30	2	2	6	25	
32	592	1288	32	9	2	4	33	
33	704	1406	33	15	4	14	22	
34	734	1288	36	17	11	21	34	1
35	724	1319	35	23	26	39	40	2
36	645	1034	38	22	32	58	36	2
37	728	929	44	43	58	110	34	2
38	653	714	48	57	97	200	33	3
39	541	492	52	42	98	214	31	7
40	477	416	53	55	132	252	34	11
41	465	246	65	69	142	215	40	10
42	434	201	68	67	182	211	46	12
43	391	135	74	72	124	170	42	15
44	354	83	81	69	105	92	53	16
45	296	38	89	51	74	73	50	16
46	297	23	93	58	75	46	62	12
47	301	17	95	47	85	34	71	22
48	314	9	97	47	88	20	82	38
49	266	4	98	19	104	9	92	23
50	236	4	98	13	106	7	94	21
51	197	6	97	1	95	2	98	11
52	157	2	99	3	78		100	7
53	81		100		42		100	-
54	46		100		24		100	
55	15		100		22		100	1
56	10		100		11		100	
57	2		100		7		100	
58					4		100	
59	3		100		1		100	
60	29		100		77		100	
61								
62								
63								
64								
65								
66								
67								
68								
69								
70								
Total	11062	13254		803	1912	1798		232
50% ret. length (cm)		38.5				43.9		
Selection range (cm)		16				15?		
Selection factor		2.9				3.1		

TABLE 7

Species Ship Area Date Cod end Mean mesh size (mm) Method No. of hauls Haul duration (mins) Av. total catch (kg)	Redfish "Explorer" Iceland			Redfish "Goncharov" N. Iceland 5/8/62				Redfish "Johan Hjort" S.W. Iceland 13/9/62			
	D. Nylon 89.1 Cover 3			D. Capron 118 Cover 3 60 258				D. Manila 108 Cover 2 75 595			
Length (cm)	C.E.	Cov.	%	C.E.	Cov.	%	Meshed	C.E.	Cov.	%	Meshed
20	2	3	40					4	830	0.5	
21	3	1	75					1	80	1	
22	3	5	38						38	0	
23	-	8	0					1	34	3	
24	9	12	43						29	0	
25	25	13	66					1	40	2	
26	33	21	61					2	34	6	
27	51	20	72						17	0	
28	164	17	91					1	10	9	
29	72	11	87					2	11	15	
30	135	3	98	24	314	7	6	1	9	10	
31	140	4	97	14	39	26	4	1	5	17	
32	119	1	99	21	66	24	16	2	2	50	
33	115	-	100	24	42	36	13	5	10	33	
34	142			43	75	36	17	1	1	50	
35	78			40	87	32	46	5	6	45	
36	61			37	47	44	38	3	1	75	
37	27			47	53	47	72	3	3	50	
38	16			46	22	68	30		2	0	
39	31			41	25	62	42	3	1	75	
40	30			40	16	71	41	8		100	
41	27			33	2	94	14	5		100	
42	21			35	6	85	16	12		100	
43	-			27		100	6	5		100	
44	-			16	8	67	6	3		100	
45	10			24	4	86	8	2		100	
46	21			21		100	1				
47	-			18	4	82	5				
48	10			22	2	92	1				
49				3	1	75	1				
50				13	4	77	5	1		100	
51				11	1	92	1				
52				10	2	83					
53				6		100	1				
54				5		100					
55				7	2	78	2				
56											
57				1		100					
58				2		100					
59				1		100					
60		≥ 60 1 cm		1		100					
61				1		100					
62				1		100					
63											
64				2		100					
65				2		100					
66											
67											
68											
69											
70				2		100					
Total	1346	119		641	822		392	72	1163		
50% ret. length (cm)		24.1?			31.2				35?		
Selection range (cm)		6?			8				5?		
Selection factor		2.7?			2.9				3.2?		

Table 8. Cod. Mean girth at length

Ship Locality Date	MARIE JULIA N. & NW. Iceland July		A. T. CAMERON N. Iceland July			EXPLORER N. Iceland June		
	Length cm	Max. Body Girth cm	No. of Obs.	Head Girth cm	Max. Body Girth cm	No. of Obs.	Head Girth cm	No. of Obs.
15	10.0	1						
20	-							
21	-							
22	-							
23	14.0	1				10.4	1	
24	-					10.4	3	
25	-					11.2	5	
26	14.0	2				11.6	6	
27	15.0	1				11.8	5	
28	14.2	4				12.5	6	
29	16.0	1				12.8	2	
30	14.3	3	14.0	13.8	1	12.9	4	
31	15.5	2	14.1	14.0	3	13.6	2	
32	16.0	4	15.4	15.7	3	14.2	2	
33	25.0	1	15.5	15.6	7	15.2	3	
34	17.5	4	15.8	16.2	5	-		
35	19.0	2	16.0	16.0	6	15.3	1	
36	18.4	5	16.4	16.6	12	17.0	1	
37	19.0	3	17.7	17.8	12	16.0	1	
38	18.0	4	17.8	18.0	10	17.8	3	
39	20.2	5	18.2	18.2	18	19.2	2	
40	20.5	6	19.1	19.3	12	19.2	2	
41	20.2	22	19.2	19.4	12	-		
42	21.5	16	20.3	20.4	19	-		
43	22.2	12	20.4	20.5	15	19.9	2	
44	23.1	17	20.9	21.1	25	-		
45	23.7	18	21.6	21.8	15	22.2	1	
46	23.8	9	22.0	22.2	16	22.0	1	
47	24.2	10	23.0	23.2	15	-		
48	25.4	13	23.1	23.3	15	-		
49	25.8	6	23.6	24.0	19	-		
50	25.2	15	23.1	23.3	13	23.8	2	
51	27.9	8	24.0	24.2	14			
52	27.4	10	24.8	25.0	19			
53	27.2	12	25.8	26.0	10			
54	27.7	3	25.0	23.3	13			
55	28.7	9	26.1	26.4	9			
56	30.9	13	26.3	26.4	13			
57	29.0	8	26.9	27.2	18			
58	30.9	12	27.7	28.0	12			
59	31.1	12	27.7	28.1	11			
60	33.2	14	28.7	28.9	10			
Regression Girth (G) on Length (L)							HG* = 0.529L - 2.4 cm	

Regression from curve fitted by eye, except\* which is a calculated fit

Table 8, (contd)

MARIE JULIA (contd)			A. T. CAMERON (contd)		
Length cm	Max. Body Girth cm	No. of Obs.	Head Girth cm	Max. Body Girth cm	No. of Obs.
61	33.4	11	29.3	29.7	5
62	35.6	10	29.2	29.4	12
63	35.5	10	30.4	30.6	14
64	36.0	6	30.8	31.3	5
65	34.3	4	31.4	31.8	5
66	35.7	9	31.9	32.4	5
67	36.5	6	32.1	32.5	8
68	38.2	9	32.4	33.0	5
69	37.2	5	34.2	34.6	6
70	38.6	9	34.5	34.7	4
71	38.3	11	34.4	35.1	1
72	40.3	4	34.8	35.5	4
73	40.1	10	-	-	-
74	41.2	6	36.1	36.6	4
75	42.3	6	-	-	-
76	41.9	8	37.7	38.3	2
77	43.7	6	37.0	37.4	2
7	41.4	7	37.4	37.4	1
79	46.5	2	-	-	-
80	39.0	1	-	-	-
81	44.0	1	-	-	-
82	44.3	3	39.6	40.3	2
83	46.0	1	-	-	-
84	43.0	1	44.4	46.9	1
85	46.0	2	-	-	-
86	46.5	2	45.6	46.2	1
87	43.5	2	-	-	-
88	-	-	40.6	40.7	1
89	45.0	1	45.2	46.4	1
90	-	-	-	-	-
95	56.0	1	-	-	-
97	50.0	1	-	-	-
99	-	-	50.5	53.6	1
102	51.0	1	-	-	-
105	63.0	1	-	-	-
Regression Girth (G) on Length (L)	157		30		
	BG = 0.564L - 2.0 cm		HG = 0.496L - 1.1 cm BG = 0.511L - 1.5 cm		

Table 9. Haddock. Mean girth at length

Ship Locality Date	EXPLORER N. Iceland June		A. T. CAMERON N. Iceland July				MARIE JULIA N. & NW. Iceland July			
	Length cm	Head Girth cm	No. of Obs.	Mean Head Girth (cm)	No. of Obs.	Mean Body Girth (cm)	No. of Obs.	Max. body Girth cm	No. of Obs.	
22	10.0	1								
23	11.1	3					13.0	1		
24	-						-			
25	11.9	3	13.4	2	13.6	1				
26	12.0	2	13.2	2	13.5	1	-			
27	12.8	1	-	-	-	-	-			
28	13.4	3	14.4	8	14.8	3	-			
29	13.6	2	14.8	8	15.1	7	15.3	3		
30	14.1	2	15.5	8	15.8	8	16.0	2		
31	14.6	3	16.1	11	16.6	10	17.0	2		
32	-		16.7	10	16.9	10	18.0	5		
33	15.6	2	16.5	10	16.9	8	18.5	2		
34	16.0	2	17.5	5	18.0	4	-			
35	16.4	2	17.6	3	18.0	3	21.0	3		
36	17.0	2	18.8	2	19.0	2	19.0	1		
37	17.3	1	19.4	7	19.7	5	21.0	1		
38	-		19.7	5	20.2	5	-			
39	18.7	3	21.1	7	21.5	7	21.5	8		
40	19.4	3	20.8	12	21.3	12	22.9	7		
41	19.6	5	21.5	12	22.0	12	23.3	12		
42	19.3	2	22.1	12	22.7	12	23.2	19		
43	20.7	1	22.5	9	23.1	9	24.3	33		
44	21.2	1	22.6	6	23.5	6	24.7	34		
45	21.3	2	23.1	6	23.7	6	25.2	34		
46	21.6	2	24.2	3	25.0	3	26.1	16		
47	-		24.7	8	25.2	8	26.5	12		
48	22.6	1	25.5	5	26.5	5	26.5	11		
49	22.6	1	26.1	4	26.9	4	27.7	9		
50			26.8	8	27.3	7	31.3	3		
51			27.6	4	28.5	4	29.6	5		
52			28.1	3	29.4	3	28.8	8		
53			26.9	6	27.7	3	29.1	12		
54			28.4	9	29.5	7	30.1	17		
55			29.2	6	30.5	5	30.4	10		
56			28.8	7	29.9	7	30.7	24		
57			29.7	3	30.3	2	30.9	15		
58			30.1	3	31.5	3	35.6	20		
59			30.8	3	31.8	3	31.7	14		
60			30.7	4	32.0	4	32.3	18		
61			32.7	1	-	-	33.7	10		
62			31.3	3	32.3	3	33.8	6		
63			31.8	1	32.5	1	34.0	6		
64			31.5	1	33.3	1	32.0	2		
65			-	-	-	-	37.5	2		
66			-	-	-	-	36.0	3		
67			29.9	1	31.0	1	36.5	2		
70			35.2	1	37.8	1	-			
74							39.0	1		
Regression Girth (G) on Length (L)	$G^* = 0.475L + 0.01$ cm		$G^* = 0.495L + 1.0$ cm				$G = 0.552L$			

Regression from curve fitted by eye, except \* which are calculated fits

Table 10. Redfish. Mean girth at length

Ship Locality Date <u>Sebastes</u> type	A. T. CAMERON N. Iceland July			ANTON DOHRN W. Iceland July      S. W. Iceland July			
	Not separated, probably <u>marinus</u>			<u>marinus</u>	<u>mentella</u>		
Length cm	Head Girth cm	Body Girth cm	No. of Obs.	Body Girth cm	No. of Obs.	Body Girth cm	No. of Obs.
19	13.6	13.5	1				
23	15.6	15.3	1				
24	17.3	17.4	2				
25	17.9	18.1	6				
26	18.4	18.6	9				
27	19.1	19.3	19	18.1	33		
28	20.1	20.2	16	18.9	42		
29	20.8	21.0	17	19.9	40		
30	21.8	22.0	22	20.9	50		
31	22.3	22.6	18	21.3	64		
32	22.8	23.0	13	22.0	78		
33	23.7	24.0	12	23.1	68		
34	24.2	24.7	14	23.6	79		
35	25.2	25.4	8	24.3	93		
36	26.3	26.8	10	24.8	73		
37	26.4	27.1	5	25.6	98		
38	26.9	27.1	4	26.6	109		
39	27.3	27.3	1	27.3	114		
40	29.6	30.5	1	28.1	114		
41	29.0	29.0	1	28.9	108	29.5	37
42	31.5	32.9	1	29.6	99	30.4	70
43	29.8	30.2	2	30.2	75	31.2	60
44				31.0	74	31.7	83
45				32.1	64	32.8	63
46				32.5	52	32.9	36
47				33.2	63		
48				34.0	54		
49				34.5	47		
50				35.5	44		
51				35.9	20		
52				36.6	32		
53				37.8	27		
Regression Girth (G) on Length (L)	HG* = 0.73L - 0.5 cm BG = 0.75L - 0.8cm			BG* = 0.742L - 1.7cm BG* = 0.711L+0.5cm			

Regression from curve fitted by eye, except\* which are calculated fits