RESTRICTED

INTERNATIONAL COMMISSION FOR THE NORTHWEST ATLANTIC FISHERIES

Serial No. 1663
(D. c. 8)

ICNAF Res. Doc. 66-58

ANNUAL MEETING - JUNE 1966

The effect of chafers on the selectivity, strength and durability of trawls
(a second revised report)

by A. I. Treschev

Following the ICNAF recommendation to explore the possibility of elimination of the use of topside chafing gear, investigations have been carried out in the USSR in recent years to evaluate the effect of chafers of different types on the selectivity, strength and durability of trawls.

At the 14th Annual Meeting of ICNAF, Soviet experts made a verbal statement about the extent and main lines of the research in this field.

In 1965 a special report on the preliminary results of the completed work was presented at the 15th meeting of ICNAF (Research Document No. 66, Serial No. 1534, 1965). The revised report comprises the data of the above-mentioned investigations in detail.

Experimental data

First experimental data on the comparative selectivity of trawls used with and without chafers were obtained in the USSR in 1959 during a trip of the trawler Tunets. During that cruise, experiments were conducted to determine the selectivity of trawls used without chafers and at the same time fishing operations were carried out with a trawl having a tightly fitted chafer made of the same material as the codend. A comparison of the results of the experimental trawlings showed a certain difference in the size composition of catches obtained.

According to data from alternate hauls, the 50% selection length, for a double braided flax-and-hemp codend made of twine of 5mm in diameter with the inner mesh size of 110 mm and used without chafer, was 39 cm and, for the same codend, with chafer was 37 cm.

At the time of the international trawl selectivity experiments conducted in Icelandic waters in 1962, experimental hauls were carried out from the large stern trawler Goncharov to estimate the effect of a chafer of the ICNAF type on trawl selectivity in fishing for cod and haddock. These experiments were performed with the use of conventional commercial trawl nets. Duration of the hauls varied from 1 1/2 hours to 3 hours depending on the size of catches.

Each successive experiment comprised not less than 5 hauls. For estimation of selectivity, a small-meshed cover was applied.

The effect of a chafer on trawl selectivity in the redfish fishery was studied on board the large stern trawler Kometa in 1965 in ICNAF Divisions 3K and 3T.

A chafer was made from the same material as the codend. It had the same mesh size and was an equal number of meshes in width. It was located in the rear part of the codend along 207 rows of the codend which had a total length of 441 rows.

Attachment of the chafer to the codend was mesh for mesh along the fore and side edges.

To prevent displacement of the meshes of the chafer in relation to the codend, the meshes of both were fixed with a lacing running down the middle and forked at the after end.

The rear selveges of the chafer and the codend were tucked in together and tied up in a usual manner. On the after part of the codend, a protective flap made of bull hide or some other rigid fabric was attached to the underside. (See Circular Letter by Executive Secretary dated January 16, 1964. Chafing gear used by ICNAF countries.)

For estimation of the selectivity the same codend was tried several times with and without a chafer.

In 1964 the laboratories of commercial fishing techniques of VNIRO (Moscow) and PINRO (Murmansk) developed and tested a number of experimental capron codends of a new design with a view to finding a material of higher strength which could be used for making trawl codends.

Preliminary laboratory experiments on the choice of the most suitable netting twine were conducted. The main requirement for those experiments was to ensure the maximum tenacity of webbing when the diameter of the twine is not more than 4.5 mm and the relative elongation does not exceed that of usually used capron trawl nets.

Two types of twisted trawl twine, R 8500 tex 80S and R9500 tex 71S, were chosen in the course of laboratory dynamometric tests.

The strength of a knot of double webbing made of the twine of the first type was 540 kg, and that of the second type about 620 kg. These webbings were used to make experimental codends which were extensively (until completely worn out) tested on board the large stern trawler Severnoye siyanie, pertaining to vessels of the Pushkin type. Figure 1 shows a diagram of the experimental codend with its dimensions (also in 1965 Res. Doc. No. 66, Serial No. 1534).

Trials were made under normal fishing conditions with the speed of haul from 3.5 to 4 knots and duration from 1/2 to 3 hours.

During these experiments, observations were made on wear and tear resistance of the material and on changes in mesh sizes of experimental codends in the process of their exploitation. The mesh size was measured before testing codends and then at intervals of ten hauls. The ICNAF wedge-shaped gauge and the ICES spring-loaded mesh gauge were used. In each codend, a series of 30 consecutive meshes, being at least 10 meshes from the lacings, were measured.

In order to calculate the rate of fatigue of the material of codends used without chafers, samples of webbing, 5 meshes by 5 meshes in size, were periodically cut from the codends for analysis.

The results of determination of mesh size and strength of meshes are tabulated below.

Table 1. Sizes and strength of meshes of experimental trawl codends "A" and "B".

Indices	A				B			
	Before use (dry)	After 10 hauls	After 20 hauls	Average	Before use (dry)	After 10 hauls	After 20 hauls	Average
Inner size of mesh (in mm)	99.9	106.6	114.0	106.8	96.2	102.8	107.2	102.1
Strength (in kg)	540	560	507	535.7	620	630	570	606.6

A - codend made of twine R8500 tex 80S; B - codend made of twine R9500 tex 71S

In addition to the above, the experimental codends were tested for their selectivity. For this purpose five hauls were made with each codend rigged with a fine-meshed cover of standard type.

Data obtained from the tests are set out in Annex 1 and Annex 2 to this report.

Table 2 shows a summary of the results of the above-described experiments on the estimation of the effect of chafers on the selectivity of bottom trawls in relation to cod, haddock and redfish.

Discussion and conclusions

The experiments showed (Table 2) that the effect of a flap type of chafer of the ICNAF type and a tightly fitted chafer of the Sevryba type on the selectivity of codends in relation to cod is approximately the same.

A mean value of selection factor of codends made of double capron twine and used with these types of chafers can be taken as equal to 3.7. The difference in selectivity of codends used with and without chafer in this case will be $\frac{(4.0 - 3.7) \times 100}{3.7} = 8.1\%$.

In relation to haddock the effect of chafers of the ICNAF type on the selectivity of codends has proven to be considerably greater:

$$\frac{(4.0 - 3.45) \times 100}{3.45} = 15.9\%$$

It is quite possible that the specific features of the region and the season have contributed to this. The experiments were carried out off Iceland in the end of summer when haddock was feeding heavily.

Moreover, a mean value of selection factor (3.45) had been obtained only from two series of tests which differed greatly in their indices of selectivity (0.9).

Table 2 shows that the use of a chafer of the Sevryba type did not have any appreciable effect on the value of selection factor of a trawl in relation to redfish. There is reason to believe that redfish which are being raised from a great depth become very active due to the sharp changes in hydrostatic pressure and escape not only through the codend but also through the meshes of the fore parts of the trawl. This assumption is confirmed by frequent observations of the meshing of redfish in the portions of a trawl ahead of the codend.

Results of mesh measurements in experimental codends showed that the elongation of trawl twine when used without chafer was considerably greater than that when chafer was attached.

In codends tested without chafers, stabilization of the meshes did not occur after the tenth haul as it usually happens when a chafer is applied.

The relative increase in inner size of mesh in the "A" codend between the tenth and twentieth hauls was 7% and that in the "B" codend was about 4%. The relative increase of mesh size after the tenth hauls in comparison with a new webbing measured in dry condition in both cases was the same, i.e. approximately 6.5%.

The breaking strength of meshes in the "A" codend as well as in the "B" codend became somewhat greater after the tenth trawling as compared with new material. Obviously this can be explained by the fact that the dynamometric measurements were made under different conditions, i.e. in the wet and dry state.

Table 2. Results of experiments on evaluation of the effect of use of different types of chafers on the selectivity of trawls in relation to cod, haddock and redfish.

Vessel and year	Area	Cod-end	Chafer	Average catch per haul (kg)	50% selection length (cm)	Selection factor	
I	2	3	4	5	6	7	
		Cod					
"Tunets", I959	Barents Sea	Double flax-and-hemp I09,2 mm	No	I420	39,0	3,6	
-"-	-"-	-"-	Double-flax-and-hemp I09,6 mm	I350	37,I	3,4	
"Goncharov", I962	Island	Double capron I08,0 mm	No	I253	44,7	4,I	
"Kometa", I963	Labrador	Double capron I04,8	-"-	28I7	4I,9	4,0	
"Severnoye siyanie", I965	Labrador	Double capron I02,I mm	-"-	7869	4I,4	4,0	4,0
-"-	-"-	Double capron I07,0 mm	-"-	4289	42,2	3,9	
"Goncharov", I962	Iceland	Double capron	ICNAF type, double capron I27,2 mm	2027	4I,5	3,8 (3,3)	
-"-	-"-	Double capron I25,0 mm	ICNAF type, double capron I09,0 mm	I853	44,0	3,5 (4,I)	3,65
"Kometa", I963	Flemish-Cape	Double capron I04,0 mm	"Sevryba" type I07,2 mm	3040	39,8	3,8 (3,7)	
		Haddock					
"Goncharov", I962	Iceland	Double capron I08,0 mm	No	I253	43,3	4,0	
"Goncharov", I962	Iceland	Double capron I08,0 mm	ICNAF type, double capron I27,2	2027	42,5	3,9 ? (3,4)	
-"-	-"-	Double capron I25,0 mm	ICNAF type double capron I09,0 mm	I853	36,7	3,0 (3,4)	3,45
		Redfish					
"Kometa", I963	Flemish-cape	Double capron I07,2 mm	No	I970	28,5	2,7	
"Kometa", I963	-"-	Double capron I02,8 mm	"Servryba" type I04,0 mm	I327	27,5	2,7 (2,6)	

Note: Selection factors calculated in relation to mesh sizes of chafers are shown in brackets

Mesh strength in both codends decreased considerably between the tenth and twentieth hauls. This decrease caused by fatiguing of the codend material essentially affected the durability of the codends tested.

During tests, the "A" codend was damaged seven times. It became completely worthless (broken down when the catch was being hauled along the slip) after 53 hours of trawling. The "B" codend was damaged three times. It lifted catches up to 15 tons and broke down when the catch of about 20 tons was hauled on the slip. This codend was used for a total of 77 hours of trawling. The average duration of work with tightly fitted chafers is 150-200 hours of trawling.

Thus, with comparatively great average breaking strength of mesh (606.7 kg), the operations conducted without chafing gear from high-sided stern trawlers are restricted both by the size of catches hauled and the durability of codends.

In these conditions, if it is taken into account that the selectivity depends largely on the relationship between mesh sizes in the codend and in the chafer (see experiments with different mesh sizes in codend and in chafer, Goncharov, 1962), the technical solution which would secure an increase in selectivity and which would retain an appropriate strength, would be the use of tightly fitted chafers made of webbing with mesh size two times the mesh size of the codend.

As the experiments showed, such a codend has to be reinforced with transverse wires at intervals of not more than 2 m to prevent mesh displacement.

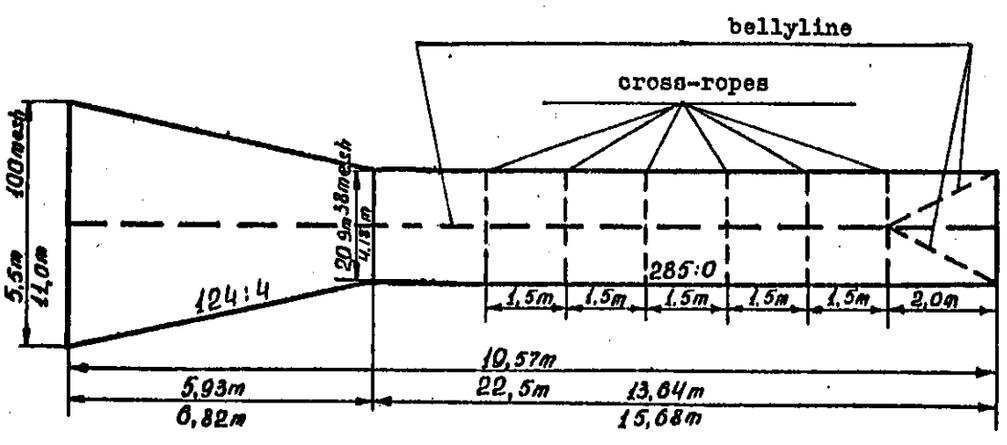

Fig. 1. Diagram of an experimental codend designed to operate without chafer.

ANNEX 1

SOVIET EXPERIMENT ON TRAWL WITHOUT CHAFING GEAR, "SEVERNOYE SIYANIE", COD, DOUBLE KAPRON.

AREA	LABRADOR
TYPE OF COD - END	A
AVERAGE MESH SIZE (MM)	107 mm

Length (cm)	HAUL 1			HAUL 2		
	cod-end	cover	reten-tion %	cod-end	cover	reten-tion %
<31		119	0		21	0
31	8	46	14,8		15	0
2	12	135	8,2		36	0
3	22	50	30,5	1	8	11,1
4	19	80	19,2	1	11	8,3
5	27	250	9,7	9	27	25,0
6	40	213	15,8	2	10	16,7
7	50	201	19,9	4	29	12,1
8	53	108	32,9	3	21	12,5
9	66	301	17,9	2	13	13,3
40	180	200	47,4	5	25	16,7
1	200	246	44,8	28	30	48,3
2	283	492	36,5	20	54	27,0
3	216	180	54,5	26	85	28,4
4	320	106	75,1	32	37	46,4
5	329	72	82,0	77	10	88,5
46	108	10	91,5	25	70	24,7
7	233	18	92,8	20	4	83,3
8	162	6	96,4	21		100,0
9	387	12	96,9	33		100,0
50	558	26	95,5	72		100,0
1	606	24	96,2	86		100,0
2	504	12	97,7	30		100,0
3	288		100,0	29		100,0
4	488		100,0	81		100,0
5	583		100,0	23		100,0
6	369		100,0	23		100,0
7	261		100,0	80		100,0
8	453		100,0	27		100,0
9	261		100,0	78		100,0
60	207		100,0	36		100,0
1	126		100,0	42		100,0
2	471		100,0	18		100,0
3	108		100,0	72		100,0
4	72		100,0	3		100,0
5	27		100,0	13		100,0
6	49		100,0	43		100,0
7	89		100,0			
8	45		100,0			
9	59		100,0			
70				6		100,0
1	72		100,0			
2	86		100,0			
3	18		100,0			
4	9		100,0	23		100,0
5						
6						
7	9		100,0			
8						
	8533	2907	74,6	1092	506	68,8

SOVIET EXPERIMENT ON TRAWL WITHOUT CHAFING GEAR, "SEVERNOYE SIYANIE", COD, DOUBLE KAPRON,

AREA	LABRADOR
TYPE OF COD - END	A
AVERAGE MESH SIZE (mm)	107 mm

Length (cm)	HAUL 3			HAUL 4		
	cod-end	cover	retention %	cod-end	cover	retention %
<31		59	0		85	0
31	2	24	7,7	7	50	12,3
2	6	68	8,7	7	90	7,2
3	5	50	9,1	1	35	2,8
4	2	30	6,2	4	68	5,5
5	19	100	16,0	64	249	20,4
6	6	71	7,8	5	60	7,7
7	56	115	32,7	10	110	8,3
8	12	74	13,9	15	170	8,1
9	40	100	28,6	57	154	27,0
40	151	107	58,5	83	300	21,7
1	80	165	32,6	89	275	24,4
2	120	86	58,2	180	139	56,4
3	13	85	13,3	35	248	12,4
4	195	69	73,9	280	90	75,7
5	192	45	81,0	240	196	55,0
6	226	18	92,6	132	95	58,1
7	108	2	98,2	419	42	90,9
8	46	5	90,2	301	39	88,5
9	175	12	93,6	222	9	96,1
50	273	6	97,8	384	21	94,8
1	416	3	99,3	154	18	89,5
2	373		100,0	340	12	96,6
3	264		100,0	336	3	99,1
4	368		100,0	397	5	98,7
5	168		100,0	255	3	98,8
6	336		100,0	357		100,0
7	288		100,0	326		100,0
8	264		100,0	154		100,0
9	152		100,0	234		100,0
60	132		100,0	91		100,0
1	256		100,0	188		100,0
2	104		100,0	289		100,0
3	56		100,0	21		100,0
4	168		100,0	140		100,0
5	32		100,0	112		100,0
6	88		100,0	56		100,0
7	8		100,0	182		100,0
8	104		100,0	70		100,0
9	136		100,0	196		100,0
70	176		100,0	28		100,0
1	96		100,0	7		100,0
2	32		100,0			
3	48		100,0	21		100,0
4	8		100,0			
5	16		100,0	14		100,0
6	8		100,0	7		100,0
7	24		100,0	7		100,0
8				7		100,0
9						
80	16		100,0			
	5864	1289	82,0	6524	2566	71,8

SOVIET EXPERIMENT ON TRAWL WITHOUT CHAFING GEAR, "SEVERNOYE SIYANIE", COD, DOUBLE KAPRON.

AREA	LABRADOR
TYPE OF COD - END	A
AVERAGE MESH SIZE (mm)	107 mm

Length (cm)	HAUL 5		
	cod - end	cover	retention %
< 31		45	0
31	2	17	10,5
2	10	47	17,5
3	4	29	12,1
4	29	70	29,3
5	28	100	21,9
6	45	99	31,2
7	53	100	34,6
8	134	315	29,8
9	131	156	45,6
40	108	205	34,5
1	116	142	44,9
2	260	145	64,2
3	344	70	83,1
4	288	120	70,6
5	432	170	71,8
6	378	70	84,4
7	344	15	95,8
8	295	25	92,2
9	188	10	94,9
50	459	50	90,2
1	512	15	97,1
2	415	5	98,8
3	216	5	97,7
4	468		100,0
5	558		100,0
6	423		100,0
7	297		100,0
8	216		100,0
9	117		100,0
60	171		100,0
1	252		100,0
2	279		100,0
3	90		100,0
4	144		100,0
5	18		100,0
6	27		100,0
7			
8	63		100,0
9	54		100,0
70	36		100,0
1	18		100,0
2	9		100,0
3	9		100,0
4			
5	9		100,0
6			
7			
8			
9			
80			
	8049	2025	79,9

SOVIST EXPERIMENT ON TRAWL WITHOUT CHAFING GEAR, "SEVERNOYE SIYANIE", COD, DOUBIE KAPRON.

AREA	LABRADOR
TYPE OF COD - END	A
AVERAGE MESH SIZE (mm)	107 mm

Length (cm)	TOTAL		
	cod - end	cover	retention %
< 31		329	0
31	19	152	11,1
2	35	371	8,6
3	33	172	16,1
4	55	259	17,5
5	147	726	16,8
6	98	453	17,8
7	173	555	23,7
8	217	688	23,9
9	296	724	29,0
40	527	837	38,6
1	513	858	37,4
2	863	916	48,5
3	634	668	48,7
4	1115	422	72,5
5	1270	493	72,0
46	867	263	76,7
7	1124	81	93,3
8	825	75	91,6
9	1005	43	95,9
50	1746	103	94,4
1	1774	60	96,7
2	1662	29	98,3
3	1133	8	99,3
4	1802	5	99,7
5	1587	3	99,8
6	1508		100,0
7	1252		100,0
8	1114		100,0
9	842		100,0
60	637		100,0
1	864		100,0
2	1161		100,0
3	347		100,0
4	527		100,0
5	202		100,0
6	263		100,0
7	279		100,0
8	282		100,0
9	445		100,0
70	246		100,0
1	193		100,0
2	127		100,0
3	96		100,0
4	40		100,0
5	39		100,0
6	15		100,0
7	40		100,0
8	7		100,0
9			
80	16		100,0
	30062	9293	76,4

ANNEX 2

SOVIET EXPERIMENT ON TRAWL WITHOUT CHAFING GEAR, "SEVERNOYE SIYANIE", COD, DOUBLE KAPRON.

AREA	LABRADOR
TYPE OF COD-END	B
AVERAGE MESH SIZE (mm)	102 mm

Length (cm)	HAUL 1			HAUL 2		
	cod-end	cover	reten-tion %	cod-end	cover	reten-tion %
<31		1	0		13	0
31					3	0
2		1	0		4	0
3				1	4	20,0
4				1	6	14,3
5				2	10	16,7
6		2	0	1	5	16,7
7				5	20	20,0
8		1	0	2	10	16,7
9	1	5	16,7	1	6	14,3
40	5	2	71,4	7	43	14,0
1	4	3	57,1	4	24	14,3
2	2	2	50,0	10	45	18,2
3	5	3	62,5	21	48	30,4
4	3	2	60,0	19	32	37,2
5	25	7	78,1	159	102	60,9
6	16	3	84,2	60	20	75,0
7	12	5	70,6	82	13	86,3
8	24	10	70,6	26	2	92,8
9	42	2	95,4	30	2	93,7
50	28	8	77,8	62	4	93,9
1	26	6	81,2	65	3	95,6
2	47	4	92,1	132	8	94,3
3	28	2	93,3	49		100,0
4	13		100,0	48		100,0
5	85		100,0	72		100,0
6	2		100,0	40		100,0
7	70		100,0	49		100,0
8	5		100,0	24		100,0
9	10		100,0	22		100,0
60	30		100,0	34		100,0
1	1		100,0	10		100,0
2	4		100,0	12		100,0
3	2		100,0	2		100,0
4				12		100,0
5	1		100,0	14		100,0
6	41		100,0	4		100,0
7				4		100,0
8				22		100,0
9	11		100,0			
70				6		100,0
1	2		100,0			
2						
3						
4						
5						
	545	69	88,8	1114	427	72,3

SOVIET EXPERIMENT ON TRAWL WITHOUT CHAFING GEAR, "SEVERNOYE SIYANIE", COD, DOUBLE KAPRON.

AREA	LABRADOR
TYPE OF COD-END	B
AVERAGE MEAH SIZE (mm)	I02 mm

Length (cm)	HAUL 3			HAUL 4		
	cod-end	cover	reten-tion %	cod-end	cover	reten-tion %
<31		7	0		26	0
31		5	0		20	0
2		6	0	2	27	6,9
3		4	0	2	33	5,7
4	1	25	3,8	3	32	8,6
5		12	0	8	89	8,2
6	2	26	7,1	8	50	13,8
7	1	19	5,0	4	31	11,4
8	2	25	7,4	8	69	10,4
9	4	36	10,0	24	130	15,6
40	22	75	22,7	58	230	20,1
1	18	54	25,0	41	198	17,1
2	30	75	28,6	95	158	37,5
3	46	80	36,5	270	70	79,4
4	50	70	41,7	205	94	68,6
5	106	42	71,6	290	76	79,2
46	81	24	77,1	210	46	82,0
7	100	14	87,7	385	70	84,6
8	72	6	92,3	270	8	97,1
9	68	4	94,4	330	6	98,2
50	105	4	96,3	360	32	91,8
1	98	4	96,1	220	2	99,1
2	84	2	97,7	420	4	99,0
3	142	6	95,9	305		100,0
4	75		100,0	295		100,0
5	51		100,0	330		100,0
6	81		100,0	245		100,0
7	63		100,0	270		100,0
8	61		100,0	350		100,0
9	45		100,0	130		100,0
60	42		100,0	210		100,0
1	6		100,0	125		100,0
2	16		100,0	140		100,0
3	5		100,0	140		100,0
4	22		100,0	20		100,0
5	15		100,0	35		100,0
6	12		100,0	45		100,0
7	26		100,0	10		100,0
8	1		100,0			
9	4		100,0			
70				5		100,0
1				5		100,0
2						
3						
4						
5						
	1557	625	71,3	5873	1501	79,6

SOVIET EXPERIMENT ON TRAWL WITHOUT CHAFING GEAR, "SEVERNOYE SIYANIE", COD, DOUBLE KAPRON.

AREA	LABRADOR
TYPE OF COD-END	B
AVERAGE MESH SIZE (mm)	I02 mm

Length (cm)	HAUL 5		
	cod - end	cover	retention %
<31		18	0
31		8	0
2	2	30	6,2
3	7	27	20,6
4	8	40	16,7
5	20	108	15,6
6	14	92	13,2
7	24	26	48,0
8	144	102	58,5
9	126	92	57,8
40	192	78	71,1
1	398	166	70,6
2	328	128	71,9
3	144	96	60,0
4	420	146	74,2
5	402	132	75,3
46	393	59	86,9
7	336	54	86,1
8	520	42	92,5
9	288	22	92,9
50	576	48	92,3
1	376		100,0
2	248		100,0
3	496		100,0
4	272		100,0
5	472		100,0
6	352		100,0
7	248		100,0
8	280		100,0
9	256		100,0
60	64		100,0
1	162		100,0
2	32		100,0
3	8		100,0
4	104		100,0
5			
6	128		
7	184		100,0
8	16		100,0
9	40		100,0
70	48		100,0
1	16		100,0
2	8		100,0
3	16		100,0
4	8		100,0
5	32		100,0
6	16		100,0
7			100,0
8			
	8224	1514	84,4

SOVIET EXPERIMENT ON TRAWL WITHOUT CHAFING GEAR, "SEVERNOYE SIYANIE", COD, DOUBLE KAPRON.

AREA	LABRADOR
TYPE OF COD-END	B
AVERAGE MESH SIZE (mm)	102 mm

Length (cm)	TOTAL		
	Cod - end	cover	retention %
< 31		65	0
31		36	0
2	4	68	5,5
3	10	68	12,8
4	13	103	11,1
5	30	219	12,0
6	25	175	12,5
7	34	96	26,1
8	156	207	42,9
9	156	269	36,7
40	284	428	39,9
1	465	445	51,1
2	465	408	53,3
3	486	297	62,1
4	697	344	66,9
5	982	359	73,2
46	760	152	83,3
7	915	156	85,4
8	912	68	93,1
9	758	36	95,5
50	1131	96	92,2
1	785	15	98,1
2	931	18	98,1
3	1020	8	99,2
4	703		100,0
5	1010		100,0
6	720		100,0
7	700		100,0
8	720		100,0
9	463		100,0
60	380		100,0
1	304		100,0
2	204		100,0
3	157		100,0
4	158		100,0
5	65		100,0
6	230		100,0
7	224		100,0
8	39		100,0
9	55		100,0
70	59		100,0
1	23		100,0
2	8		100,0
3	16		100,0
4	8		100,0
5	32		100,0
6	16		100,0
7			
8			
9			
80			
	12313	4126	