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KOMMISSIONEN FOR DANMARKS FISKERI- OG HAVUNDERSØGELSER

SERIE: FISKERI · BIND IX

Nr. 7. A. C. Strubberg: MARKING EXPERIMENTS WITH COD AT THE FAROES. II. SECOND REPORT. EXPERIMENTS IN 1923—1927.

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MARKING EXPERIMENTS WITH COD AT THE FAROES

II. SECOND REPORT. EXPERIMENTS IN 1923—1927

BY

A. C. STRUBBERG

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A. Introduction.

1. General Remarks.

The present report discusses the continued marking experiments with Cod, which the Kommission for Danmarks Fiskeri og Havundersøgelser has carried out at the Faroes in the years 1923, 25 and 27. About 2000 Cod in all have been marked, some two-thirds of these outside the territorial limits on the coastal banks; most of the experiments were made in the months of May to August. The earlier experiments (1909—1913) were dealt with by this autor in the report: Marking experiments with Cod at the Faroes; Medd. Komm. Havunders. Serie Fiskeri. Vol. V. No. 2. 1916.

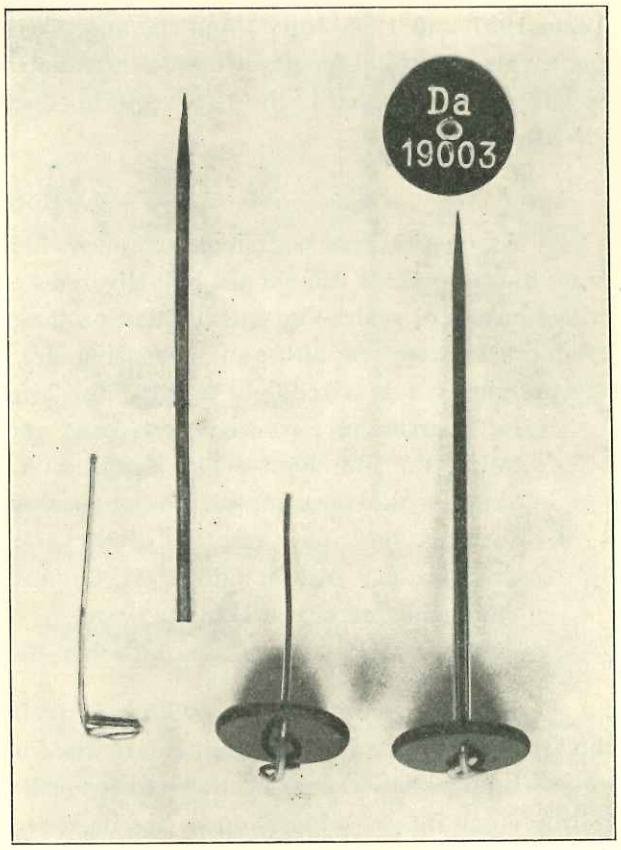

Fig. 1. Captain Hansen's marking needle.

2. The marks used.

The type of mark used in 1923 consisted of an ebonite disc and an oval bronze plate with Da and running number on it, the two discs being held together by a short wire of silver and fixed in the usual manner in the middle of the gill-cover.

By way of experiment the ebonite disc was replaced in some 200 cases by a light celluloid plate, but this did not seem to have any important influence on the results.

1000 marked with the ebonite disc yielded 245 recaptures. 200 marked with the celluloid plate yielded 45 recaptures, corresponding to 24.5 and 22.5 per cent. Nor does there seem any essential difference between these two materials in regard to the action of sea-water, within the 20 months the experiments lasted.

It was soon found that the bronze plate was less resistant than the ebonite; the parts of the plate especially, where the number and letters were stamped, were obviously "eaten away" by the sea-water after a few months already; in the course of the second year after marking the numbers in several cases could not be deciphered. For this reason we quite gave up using bronze in the following years and used ebonite marks exclusively, of the type described in "A Guide to Fish Marks" (p. 137 of the Journal du Conseil, Vol. VII, No. 1, 1932), namely 2 ebonite discs, one bearing Da and a number and the two connected by a silver wire. As it proved difficult to fix the silver wire connecting the two discs with sufficient rapidity and security through the thick gill-cover with its tough skin, especially in the case of larger fish if the silver wire was too soft, Capt. G. Hansen in 1925 experimented with a useful assisting method, "Capt. Hansen's Marking Needle", shown in Fig. 1 slightly under natural size and of which a note (by Dr. Vedel Tåning) has been published in Journal du Conseil vol. VIII, 1933.

The needle is of nickel plated brass or coldbeaten argentine, pointed and strong, bored to a depth of 4—5 cm, and is used in this manner: one end of the silver wire is bent round and one of the ebonite discs threaded onto it; then the free straight part of the silver wire is inserted in the drilled hole of the marking needle and this is used to pierce the flesh and carry the end of the wire from inside outwards through the gill-cover. The needle is then removed and the numbered disc is threaded onto the silver wire on the outside; the latter is then bent to and eye with the free end nearest to the disc and the marking is completed.

3. Experimental methods.

(Treatment of the marked fish).

The Cod are taken with hand-lines from boats hired for the purpose and the fish are marked and set free immediately. In 1923 the marking was carried out by Capt. G. HANSEN, captain of the "Dana". In 1925, 1927 and 1932 JOHN CHRISTIANSEN, Teacher of Navigation at Thorshavn, kindly looked after the experiments. The total length of the fish was noted in all cases on marking, and as far as possible the sex. The weight was only noted in the 1923 experiments, but as in the earlier work samples of scales were taken from all fish marked.

4. Records of recaptures.

As on previous occasions arrangements were made in 1923 and the later years so that the marks from the recaptured fish should be delivered to certain persons in the larger harbours of the islands, together with samples of scales and information on the place of fishing, length of fish, weight, sex, condition, number of hours between capture and measuring etc., to be given by the Faroese fishermen. These recipients paid the premiums authorized, put together the information and sent it on.

In Thorshavn, Faroe county (Amt) and Procurist ANTON DEGN;
Nolsø, the merchant H. M. HANSEN;
Skopen, the merchant I. M. POULSEN;
Sorvaag, the merchant NICLAS NICLASEN;
Trangisvaag, District Officer H. DJURHUUS;
Vaag, the merchant MAGNUS DAHL.

Besides Mr. DJURHUUS the other district officers as well as the controllers of fishsorting.

To these gentlemen, who with the officials on Faroe were so interested in the matter as to undertake the labour connected with it, thanks are due for their indispensable assistance.

Information regarding the marked fish taken by English and Scottish fishermen — other countries hardly come into consideration — has been received with the usual goodwill from respectively the Board of Agriculture and Fisheries, especially through its offices in Grimsby and Hull, and from the Fishery Board of Scotland. Of special value are the trustworthy measurements of the recaptured fish accompanying the information, when the fish themselves were delivered with the marks.

As leader of the Danish fisheries investigations at the Faroes and Iceland Professor JOHS. SCHMIDT, together with Dr. VEDEL TÅNING, has drawn up the plans for the series of experiments discussed here, in continuation of the earlier, and entrusted me with the working up of the new results as of the old. I take the opportunity here to express my thanks for this as for assistance and advice during the work.

B. The various experiments in 1923—1927.

Table 1 and Fig. 2 give information regarding the position and extent of the various experiments or groups of experiments. Of the total, some 2000 markings, about 1200 took place outside the territorial limits.

More than half of the markings (ca. 1020) were made in the waters round Nolsø, most of the remainder north and west of the islands.

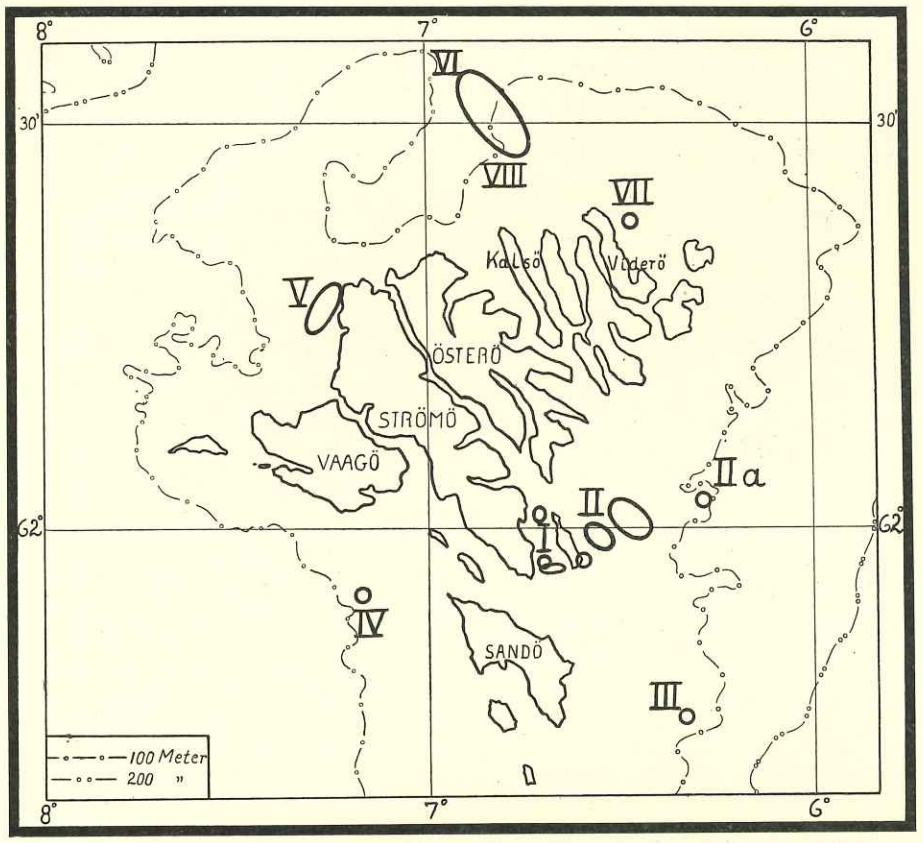

Fig. 2. Positions of the marking experiments with Cod at Faroes 1923—1932.

Table 1. Locality and extent of the experiments.

Experiment No.	Year and month	Position	Depth in m.	Intra- or extraterritorial waters	No. of cod marked p. year	Total
I a	1923 July	Nolsø Fjord	ca. 40	intrater.	300	411
$I_{1—11}$	1925 —	—	40—75	intrater.	111	
II a	1923 July & Aug.	E. of Nolsø (Húsagrynna a. o.)	35—75	extrater.	415	603
$II_{1—8, 11}$	1925 June & July	— —	35—75	extrater.	150	
$II_{9, 10}$	1925 — —	S. and E. of Nolsø	50—75	intrater.	38	
III	1923 August	E. of Sandø	..	extrater.	306	306
IV	1923 —	W. of Sandø (Guttagrynna)	60—90	extrater.	171	171
V	1927 May	W. of Strømø	..	intrater.	142	142
VI	1927 March	N.W. of Viderø	..	extrater.	198	198
VII	1927 May	N.E. of Viderø	..	intrater.	40	40
VIII	1932 Apr. & May	N. of Kalsø	..	extrater.	226	226
					Total...	2.097
					(exc. 1932	1.871)

The Nolsø experiments embrace: I. markings in Nolsø Fjord and the waters between Nolsø and Strømø, and II. markings E. or S. of Nolsø.

I. Marking experiments in Nolsø Fjord.

1. Locality and Date.

Table 2 summarizes the positions and extent of the various groups of experiments (cf. also Fig. 2 and Fig. 3).

2. Size of the fish marked.

As mentioned in the report on the earlier experiments (l. c.) a fairly intensive fishery from boats is carried on round Nolsø with hand lines, chiefly for the smaller Cod and Green Cod.

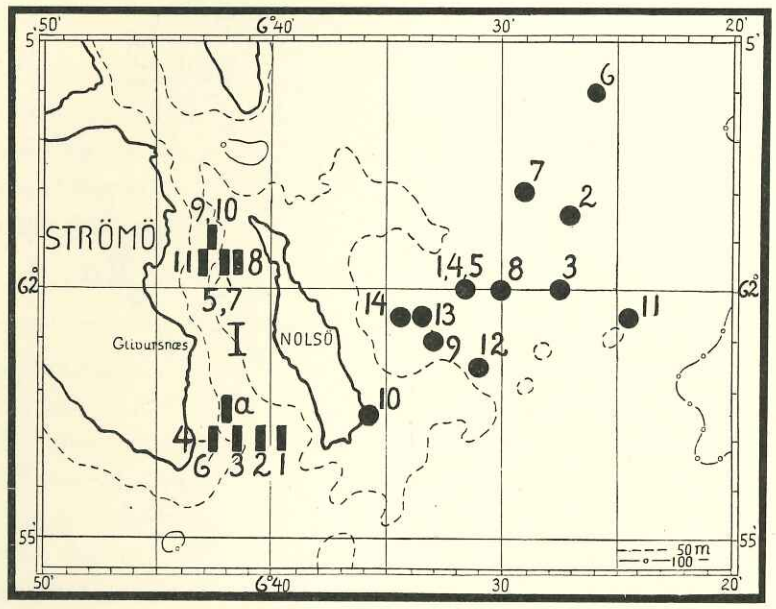

Fig. 3. Marking experiments with Cod east and west of Nolsø 1923 and 1925. Exp. II a — 62°02′ N.—6°17′ W. — omitted.

As in the experiments of 1909, 11 and 12 the great mass of the fish in the summer catches are below 50 cm. in length. All the age determinations confirm the result previously found, that the II group, i. e. Cod of $2^1/_4$ to $2^1/_2$ years old, is in the majority both in the catches and the marking experiments.

As example a series of age determinations may be given from the period $^{24}/_7$—$^{13}/_8$, 1923.

cm...	40—45	46	47	48	49	50	51	52	53	54	55
II Gr.	96	14	7	7	9	9	2	2	2	1	0
III Gr.	0	0	0	0	1	7	6	6	8	12	5
IV Gr.	0	0	0	0	0	0	0	0	0	0	0

cm...	56	57	58	59	60	61	62	63	64	67	68
II Gr.	0	0	0	0	0	0	0	0	0	0	0
III Gr.	3	10	8	8	3	4	0	2	1	2	1
IV Gr.	0	0	0	0	1	0	1	1	2	0	0

Determinations of the weight, as mentioned, were only made in the 1923 experiments (end of July). They show, that the weights for the 35—50 cm. group lie between ca. 400 and ca. 1250 g. As a weight of 1000 g. here corresponds to an average length of ca. 47—48 cm., the weight of more than half the fish marked in 1923 was thus from 400—850 g., corresponding to a length of about 35—45 cm.

3. Number of fish recaptured.

The Table 4 shows a recovery percentage of about 41, for the experiments of both years.

The separate experiments may appear somewhat small, but most of them nevertheless show good

Table 2. Marking experiments in Nolsø Fjord 1923 and 1925.

No. of Experiments	Year and month	Number of cod liberated	Number of cod recapt.	Locality of liberation	Central position (approximately) N. Lat.	Central position (approximately) W. Long.	Depth in metres
I a	1923 July 21	60	19	1.5 miles S.S.E. of Glivúrsnæs	61°57.5′	6°42′	60—70
—	— — 22	80	24	— — —	—	—	—
—	— — 23	83	36	— — —	—	—	—
—	— — 28	77	39	— — —	—	—	—
		300	118	= 39.3 %			
I_1	1925 June 17	1	..	3/4 mile W.N.W. of Borin	61°57.0′	6°39′	85
I_2	— — —	6	2	1.7 — S.E. by E. of Kirkebønæs	61°56.5′	6°40.5′	55—65
I_3	— — —	11	3	1.3 — E. by S. of —	61°56.5′	6°41.5′	45—55
I_4	— — —	12	7	0.8 — — —	61°56.5′	6°42.5′	45—55
I_6	— — —	1	..	0.8 — — —	61°56.5′	6°42.5′	—
		31	12	= 38.7 %			
I_5	1925 June 27	10	3	1 mile S.W. by W. of Nolsø N.	62°00.5′	6°42′	35
I_6	— — —	32	15	1 — — —	62°00.5′	6°42′	35
I_8	— July 4	5	2	1 — S.W. by W. of —	62°00.5′	6°41.5′	35
I_9	— — 4	4	2	1 — W. of Nolsø N.	62°01′	6°42.5′	45
I_{10}	— — 9	15	9	1.2 — W. by S. of Nolsø N.	62°01′	6°42.5′	55
I_{11}	— — 11	14	7	1.5 — W.S.W. of Nolsø N.	62°00.5′	6°43′	45—65
		80	38				
	Total 1925 ...	111	50	= 45.1 %			
	Total 1923 & 1925	411	168	= 40.9 %			

Experim. I a, $I_{1—4}$ og I_6 form one group in southern part of Nolsø Fjord.
Experim. I_5 & $I_{7—11}$ grouped in northern part of Nolsø Fjord.

Table 3. Number and size of Cod liberated in Nolsø Fjord 1923 and 1925.

	Initial sizes in cm.							
	30—39	40—49	50—59	60—69	70—79	80—89	90—97	Total
1923	16	237	40	5	..	..	2	300
1925	..	85	19	4	2	1	..	111
Total...	16	322	59	9	2	1	2	411

Table 4. Number of recaptures. Experiments in Nolsø Fjord.

Experiment and Year	No. of cod marked	Number of months between liberation and recapture																					Total recaptured	% recaptured
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
I a 1923	300	5	16	29	14	11	4	3	3	5	3	1	3	2	3	6	7	1	..	1	..	..	1	118	39.3
I 1—11 1925	111	3	5	14	9	3	4	..	2	1	..	1	1	1	1	..	..	1	2	1	..	1	..	50	45.1
	411	8	21	43	23	14	8	3	5	6	3	2	4	3	4	6	7	2	2	2	..	1	1	168	40.9

agreement in regard to the percentage of recoveries, as also in this that most recoveries were made within 5 months after marking. Both of these features, which agree well with the experience of earlier years, are to be referred to the intensive boat fishery in Nolsø Fjord.

Taken all together however the recovery percentage is somewhat lower than in the earlier experiments (1909—12: 55—75 per cent.) with Cod of similar size.

Of the total recoveries two-thirds were taken in the course of the first 4 months, and over four-fifths within 12 months; only a few were taken later than 14 months after the beginning of the experiments and none later than 21 months afterwards. The low resisting power of the marks used (see page 3) was undoubtedly to some extent responsible for this result.

It may be remarked finally, that in the following the number of months between marking and recovery indicates the number of full months reckoned from the date of marking.

Table 5. Rate of growth of (mostly) 2 and 2—3 year old Cod, liberated in Nolsø Fjord end of July 1923.

Recaptured in	Period of growth (months)	Increment in cm.			No. of specimens measured and their init. length in cm.		
		Average	Minimum	Maximum	35—49	50—62	95
1923 September 1—10	..	1.5	1	2	4	..	..
1923 September 11—20	..	1.7	0	3	6	..	..
1923 September 21—30	..	2.1	0	4	8	..	..
	2	1.8	0	4	18	..	..
— September 1—10	..	1.0	0	2	..	3	..
— September 11—20	..	1.7	0	3	..	3	..
— September 21—30	..	2.0	..	..	..	1	..
	2	1.6	..	..	..	7	..
— October 1—10	..	2.9	2	4	7	..	..
— October 11—20	..	2.3	2	3	3	..	..
— October 21—31	..	3.5	2	5	2	..	..
	3	2.7	2	5	12	..	..
— October 1—10	3	2.0	..	..	..	1	..
— November 1—10	4	3.4	3	6	10	..	..
— November 11—20	4	5.7	..	..	..	3	..
— November 21—31	4	8.0	..	..	..	..	1
— December	5	4.8	4	6	5	..	..
1924 January	6	5.7	3	10	6	..	..
— March	8	5.3	2	10	3	..	..
— April	9	3.8	2	7	4	..	..
— May	10	10.2	7	13.6	3	..	..
— June	11	11.3	9	14	3	..	..
— July	12	12.0	10	14	2	..	..
— August	13	16.0	15	17	2	..	..
— September	14	17.9	9	22	7	..	..
— October	15	19.7	15	26	3	..	..
— November	16	21.0	19	23	4	..	..
1925 February	19	19.2	..	..	1	..	..
— May	22	24.0	17	31	2	..	..

4. Growth.

Increase in length and weight.

As basis for the growth calculations only the data have been included which seemed trustworthy and where the length stated agreed with the weight. Also, only the recaptures of more than a month after marking are taken into consideration.

Further, the material only gives an approximate picture of the growth and only for a comparatively short part of the period of the experiments.

1923 experiments.

The growth in length of Cod under 50 cm. on marking was found to be for the 5 months, end of July to end of December, about 5 cm., in complete agreement with the growth found in the 1911 experiments (l. c. p. 14). In the subsequent period the values found for the growth are extremely variable, with an average for the first year estimated at about 16 cm., almost in agreement with the average of the earlier experiments; for the next 5 months again about 5 cm. (Table 5).

The scattered data confirm the earlier observation, that the weight curve rises month by month throughout the year, yet with a recognisably weaker steepness in November to February.

Two fish, both 44 cm. in length at the beginning, had grown respectively 17 and 31 cm. after 22 months (May 1925). Later recoveries have not been reported.

Of the larger fish, 50—60 cm., none was taken later than 5 months after marking, during which period the growth amounted to about 6 cm.

Table 6. Weight increment in g. of Cod liberated in Nolsø Fjord end of July 1923.

Initial weight g.	Recaptured in																					
	1923										1924										1925	
	September			October			November			Dec.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Febr.	May
375— 650..	100	..	250	225	200	..	360	..	300	550	550	..	..	..	900	..	1,400	..	..	1,725	..	..
			(2)	(2)	(2)		(2)			(3)	(2)				(2)							
660—1000..	130	220	270	200	465	150	260	350	..	..	500	435	250	970	1,300	1,425	2,100	1,800	1,700	1,925	2,300	3,050
		(4)	(5)	(3)			(5)	(3)			(3)	(2)		(3)		(2)		(5)	(3)	(3)		
1050—1990..	140	175	..	300	..	..	..	530	..	435	..	..	..	..	..	..	..	2,000	3,100	..	..	..
	(4)	(3)		(2)						(2)												
2000.....	..	150	275	..	..	..	600	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
>2000.....	..	..	..	..	..	..	..	400	..	825	..	..	..	..	..	..	..	..	..	..	..	..

The figures in brackets give the number of specimens; otherwise only 1.

Table 7. Growth in cm. of Cod liberated in Nolsø Fjord June and July 1925.

Initial size in cm.	Number of months between liberation and recapture															
	2			3			4	5	7	8	11	12	13	16	17	20
	1—10	11—20	21—30	1—10	11—20	21—30										
39—49.....	5.0	3.6	4.5	5.0	5.0	7.0	7.0	9.0	7.0	14.2	12,5	22.0	..	19	25[1])	..
	(4)	(5)	(2)	(5)			(2)				(2)				(2)	
50—58.....	4.0	..	..	..	4.0	..	..	..	..	..	..	..	22.0	..	..	25.6

[1]) 15 & 35 cm.

Figures in brackets indicate number of specimens; otherwise only 1.

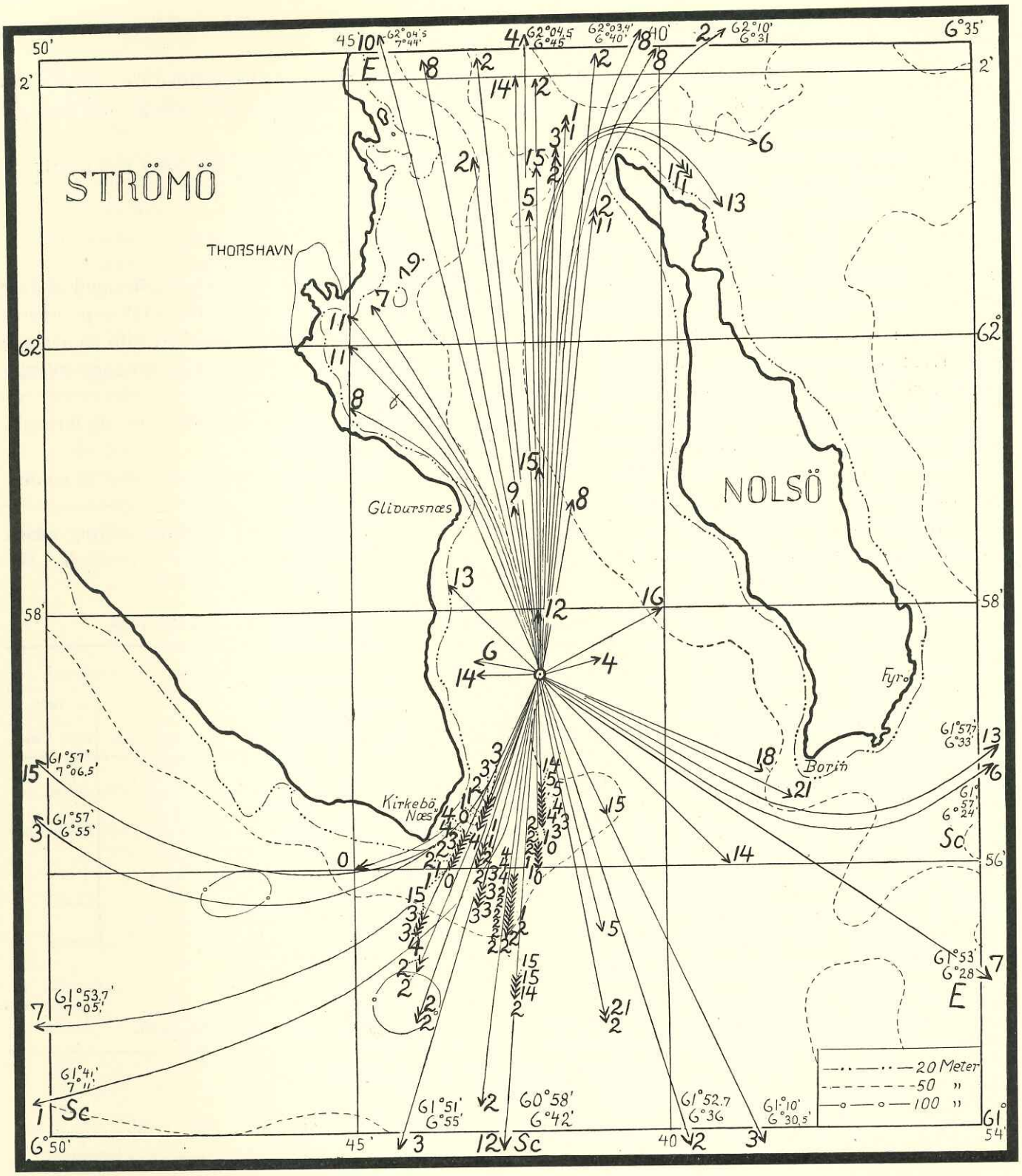

Fig. 4. Marking experiments with Cod. Nolsø Fjord. July 1923. Exp. I a.
E = recaptured by English, Sc = Scottish vessels.

The weight increase, calculated with due regard to the loss of weight in transit and cleaning before the weighing (see l. c. p. 4), can be seen from the following summary. For the fish of less than 1000 g.

in the beginning the weight has increased in the first 5 months on an average by 500—600 g., in the first 9 months by about 1000 g.; in the course of a year (August) the initial weight has been trebled.

The two specimens recaptured in February and May 1925, i. e. after 18 and 21 months respectively, show an increase of four times and five times the initial weight (ca. 700—750 g.).

The very few recaptures of larger fish are also noted in the table. Two fish of 1200 g. after 14 and 15 months respectively show an increase in weight of 2000 g. (♂) and 3000 g. (♀).

1925 experiments.

Only the first half year of the experiment gives any basis for the calculation of the average increase in growth (in the II group), amounting to about 7—8 cm. for 4 and 5 months, thus distinctly more than in

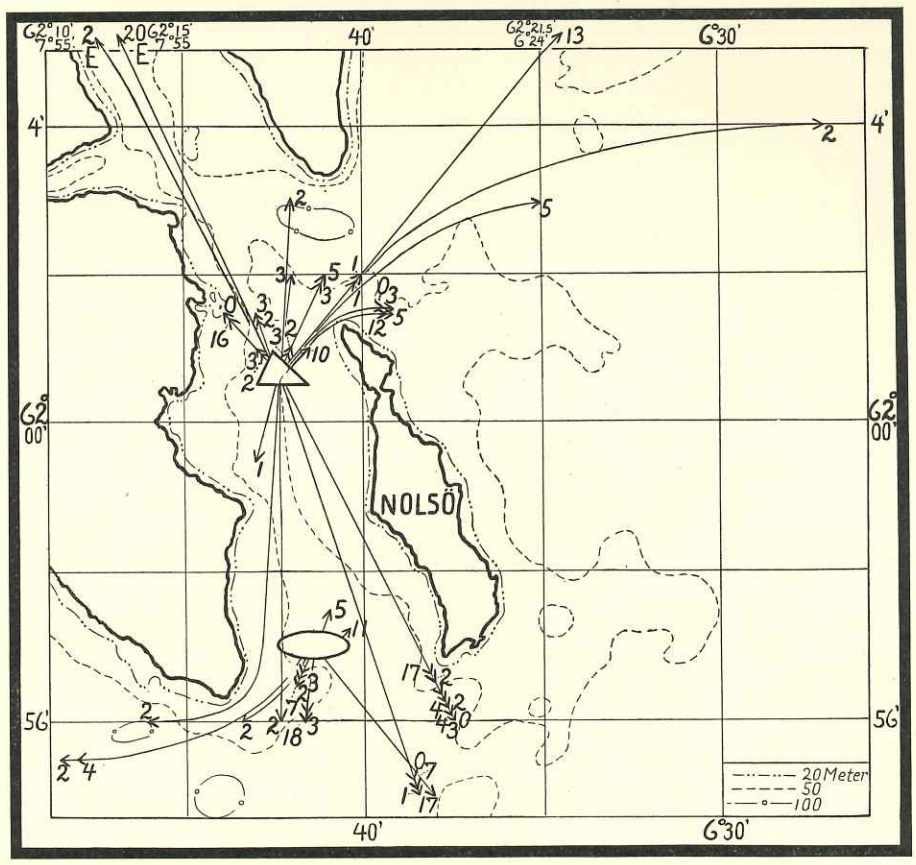

Fig. 5. Marking experiments with Cod. Nolsø Fjord. June and July 1925. Exp. $I_{1—11}$.

the 1923 experiments. If we may assume, that these few observations indicate to some extent the real condition, the different rate of growth can be referred, partly at any rate, to the different times of starting the experiments (1923 end of July, 1925 end of June). As the autumn fall in the sea temperature, as noted earlier, is strongly marked already in October (l. c. p. 21), the growth conditions in the first 5 months of the experimental period must have been most favourable in 1925.

Of the few taken later two (40 cm. ♀ and 50 cm. ♂ in the beginning) showed a growth of 22 cm. in the 12th and 13th months, corresponding to the best growths in the 1923 experiment. Noteworthy is a growth of 35 cm. in 17 months of a 42 cm. ♀. The report seems reliable, and in any case agrees quite well with the growth in a 34 cm. ♀ of the 1913 experiments here, namely 32 cm. (and 2500 g.) in 18 months (loc. cit. p. 98).

5. Migrations.

The two series of experiments (1923 and 1925) agree with each other in regard both to the fairly high recovery percentage (39 and 45) and the stationary character of the stock in the $1^1/_2$ years approximately after marking over which the recoveries are distributed. In other words the picture is quite in agreement with that shown by the earlier experiments.

Of 117 recoveries in the 1923 experiment only 8 have wandered more than 6 miles from the place of marking.

In 1925 the corresponding numbers are 53 and 4.

Figs. 4 and 5 will serve to illustrate the conditions.

The greatest wanderers embrace the following:

No. of months in sea		Initial length in cm
	1923 experiment	
1		40
$2^1/_2$		40
3		45
6		42
8		43
10		45
13		49
15		42
	1925 experiment	
2		40
2		44 ♂
13		50 ♀
20		50

6. Nationality of the fishermen.

The list below of the home-places of the fishing vessels concerned indicates how many recoveries came from boats belonging to places on the Nolsø Fjord by comparison with more remote harbours in the islands and foreign fishermen.

Table 8. Nolsø Fjord. 1923 and 1925.

	Faeroe fishing boats registered in													English S.T.	Scottish S.T.
	Nolsøfjord				Skaalefjord						Sandø	Vaagø			
	Nolsø	Thorshavn	Arge	Højvig	Kalbak	Tofte	Strænder	Saltnæs	Skaale	Fuglø	Skopen	Sandevaag	Hestø		
1923	2	97	1	..	2	3	..	1	1	..	1	1	2	1	4
1925	..	40	..	3	1	..	2	..	..	1	..	..	..	2	1
	2	117	1	3	3	3	2	1	1	1	1	1	2	3	5

Total	Faeroese	English	Scottish
	138	3	5

II. Marking experiments E. of Nolsø.

1. Locality and Date.

As shown by Figs. 2 and 3 and Table 9, the marking experiments are distributed over 3 areas east of Nolsø, in 1923 about 10 miles from land on Husagrynna (ca. 40 m. in depth), in 1925 partly about 4—6 miles out, partly within the territorial limits.

Table 9. Marking experiments E. of Nolsø. 1923 and 1925.

No. of experiments	Year and month	Number of cod liberated	Number of cod recapt.	Locality of liberation	Central position (approxim.) N. Lat.	Central position (approxim.) W. Long.	Depth in metres
II a	1923 July 24	66	16	E. by N. of Nolsø, 10 miles off (Húsagrynna)	62°02′	6°17′	40—50
	— — 26	134	55				
	1923 Aug. 3	55	4				
	— — 8	68	23				
	— — 11	92	28				
		415	126	= 30.4 %			
II 1	1925 June 3	5	1	3.5 miles E. by N. of Nolsø Peak	62°00′	6°31.5′	75
- 2	— —	72	35	5.5 — E. of Nolsø light	62°01.5′	6°27′	55—75
- 3	— —	1	0	5 — E. by N. of Nolsø light	62°00′	6°27.5′	..
- 4	— —	12	6	3.5 — E. by S. of Nolsø Peak	62°00′	6°31.5′	75
- 5	1925 July 4	13	2	3.5 — E. by S. of — —	62°00′	6°31.5′	75
- 6	— —	19	4	8 — N.E. by E. of Nolsø light	62°04′	6°26′	75
- 7	— —	5	2	5.5 — N.E. by E. of — —	62°02′	6°29′	75
- 8	— —	8	1	3-5 — E.N.E. of — —	62°00′	6°30′	65
- 9	— —	14	3	2 — E.N.E. of — —	61°59′	6°33′	60
- 10	1925 July 9	7	3	0.3 — N.E. by E. of — —	61°57.5′	6°36′	?
- 11	— —	15	8	6 — E. of — —	61°59.5′	6°24.5′	55—75
- 13	— —	4	1	2.6 — E.1/2N. of — —	61°58.5′	6°31′	75
- 13	— —	7	2	2.6 — N.E.1/2E. of — —	61°59.5′	6°33′	75
- 14	— —	6	2	2 — E. by S. of Nolsø peak	61°59.5′	6°34.5′	75
		188	70	= 37.2 %			
	Total...	603	196	= 32.7 %			

Exp. II a and II 1, 2, 3, 4, 5, 6, 7, 8 and 11 — extraterritorial.

2. Size of the fish marked.

Whilst the Nolsø Fjord experiments mainly dealt with Cod of less than 50 cm. in length, thus of the II group, the fish in the experiments in the open water east of Nolsø were on the whole larger, as might be expected (Table 10).

Table 10. Number and size of Cod liberated E. of Nolsø.

	Initial sizes in cm.							
	35—39	40—49	50—59	60—69	70—79	80—89	90—99	Total
1923.....	1	153	185	47	16	8	5	415
1925.....	1	89	75	15	5	3	..	188
Total...	2	242	260	62	21	11	5	603

3. Number of recaptures.

In the experiments of both years about a third of the marked fish were recaptured, which agrees with earlier results here. Both in the new and previous experiments the recovery percentage is somewhat lower than in Nolsø Fjord, yet the boat fishery, to judge from the marking experiments, is carried on more steadily and with much greater intensity in the waters round Nolsø than in the other coastal parts of the islands.

Table 11. Number of recaptures E. of Nolsø.

Experiment and year	No. of cod marked	Number of months between liberation and recapture																								Total recaptured	% recaptured
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24	28	
II a 1923...	415	0	0	17	40	18	9	11	1	6	1	8	4	3	3	2	1	1	1	..	..	..	..	..	..	..	126	30.4
II 1-14 1925	188	4	2	5	9	6	3	8	1	2	8	2	1	4	1	1	2	3	2	2	..	..	1	1	1	1	70	37.2
	603	4	2	22	49	24	12	19	2	8	9	10	5	7	4	3	3	4	3	2	..	..	1	1	1	1	196	32.6

Whilst the recoveries in the 1923 experiments ceased after $1^1/_2$ years, a few of the fish marked in 1925 were taken even 22—28 months after the beginning of the experiment. It will be seen also from Table 11, that the recoveries are somewhat more evenly distributed over the months than was the case in Nolsø Fjord.

Considering the number of recoveries within each size-group, we find almost the same catch-per-centage for the larger as for the smaller fish during the first three-quarters of the year; but in the last months of the period — and this applies both to 1923 and 1925 — more fish with initial size below 50 cm. were caught.

4. Growth.

Unfortunately the data of measurements are not very satisfactory for a no small part of the recoveries. The remainder, from the 1923 experiments (Table 12), show that the Cod below 50 cm. initial size (period: beginning of August to beginning of January, thus 5 months) have grown 5 cm. on an average and after 12 and 13 months respectively 12.5 and 14.8 cm. These results agree approximately with the values found here in the 1911 experiments; in this also, that the yearly growth found east of Nolsø is somewhat less than in Nolsø Fjord, the experiments for the two years agree.

The larger fish show on an average a somewhat smaller growth per month in most cases, e.g. in 10 months about 9.5 cm. for 4 specimens of 50—59 cm. in length. A few single measurements, which appear to be reliable, show, however, much greater values, e.g. 22 and 25 cm. in 11 months for fish of 53 and 56 cm.

The growth determinations from the 1925 experiments (Table 13) correspond to some extent with the results of the 1923 experiments, but the somewhat scattered data show a better growth in the first year, just as was the case in the Nolsø Fjord experiment of 1925.

Weight increase (Table 14).

According to the small usuable material the fish of 500—1000 g. (all from the 1923 experiments) have increased about 1000 g. in 12 months, whilst the fish of 1500—1900 g. and of 2000—2700 g. have

Table 12. Growth in cm. of Cod liberated E. of Nolsø. July and August 1923.

Initial size in cm.	Number of months between liberation and recapture																
	2			3			4	5	6	7	8	9	10	11	12	13	14
	1—10	11—20	21—30	1—10	11—20	21—30											
39—49	..	3.5	..	5.0	3.5	3	4.3	5.0	4.3	..	7.0	..	12	11	12.5	14.8	14
		(2)		(5)	(12)	(1)	(7)	(6)	(3)		(4)		(1)	(1)	(2)	(3)	(1)
50—59	1.5	2.5	3.3	4.5	2.7	2.7	5.1	3.0	3.3	..	7	8	9.5[1]	18.0[2]	..	..	..
	(2)	(2)	(2)	(2)	(6)	(6)	(4)	(2)	(7)		(1)	(1)	(4)	(3)			
60—69	..	..	..	..	..	2.5	5.0	2	..	..	2	..	11.3	..	..	..	..
						(1)	(2)	(1)			(1)		(3)				
70—79	..	..	..	..	4	5	..	..	..	..	..	..	..	..	..	..	..
					(1)	(1)											
88	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	(1)																

[1]) 8, 9, 10 and 11 cm. [2]) 7, 19, 22 and 25 cm.

Table 13. Growth in cm. of Cod liberated E. of Nolsø. June and July 1925.

Initial size in cm.	Number of months between liberation and recapture																						
	2			3			4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	22	23	28
	1—10	11—20	21—30	1—10	11—20	21—30																		
35—49.....	..	6	..	..	6.3	3	5.3	9	6.2	..	..	10.8	..	13	17.5	..	..	..	..	13.5	..	..	22	29
		(1)			(1)	(1)	(3)	(1)	(5)			(5)		(1)	(2)					(1)			(1)	(1)
50—59.....	..	5	7.0	1	7	5.0	8	..	1	..	3	11.9	16.5	..	..	15	..	14	24.5	..	22	17	..	..
		(1)	(2)	(1)	(1)	(2)	(1)		(1)		(1)	(3)	(1)			(1)		(1)	(1)		(1)	(1)		
60—69.....	..	..	..	..	..	4	..	5	..	..	..	..	10	..	..	..	14	..	..	..	..	..	..	..
						(1)		(1)					(1)				(1)							

increased their weight in 10—11 months by respectively 1000—1500 g. and about 1500—2000 g., values which agree to some extent with those found here previously (l. c. p. 37).

Table 14. Weight increment in g. of Cod liberated E. of Nolsø. June and July 1923.

Initial weight in gm.	Number of months between liberation and recapture									
	3	4	5	6	8	9	10	11	12	13
600—725.....	503	525	400	420	..	225	..	..	1075	1000
	(5)	(2)	(2)	(2)		(1)			(1)	(2)
750—1000.....	300	350	370	375	600	..	..	825	1200	..
	(9)	(3)	(3)	(1)	(2)			(1)	(1)	
1050—1450.....	350	150	375	180	875	..	..	..	..	1900
	(3)	(4)	(1)	(1)	(1)					(1)
1500—1900.....	600	570	525	450	..	700	1100	1450	..	..
	(2)	(1)	(1)	(1)		(1)	(4)	(3)		
2000—3000.....	450	..	..	..	125	..	1700	..	..	..
	(1)				(1)		(2)			

5. Migrations.

1923 experiments.

Fig. 6 shows, that by far the most of the recaptures in the first year of the experiment took place over the area between Husagrund and Nolsø, that is within a distance of about 10 miles. After 10 months had passed 6 specimens are given as recaptured on the actual spot where they were marked, all with initial size 54 to 67 cm. A single specimen (54 cm. to begin with) was taken after 3 months 6 miles farther to the south-east and 2 specimens (43 and 64 cm.) 6 & 8 miles to the south-west after 14 months. Further, on the east coast of Nolsø 4 fish (48, 43, 41 and 66 cm. in initial size) were recaptured after 13, 16 and 17 months.

Some few were recaptured in Nolsø Fjord about 2—4 months after marking, mostly 50—68 cm. in length on marking.

Of those which have wandered farther away 4 were recaptured after 3 to 10 months about 10—17 miles from the marking place (57—65 cm. initial size), 1 (46 cm.) after 5 months about 25 miles to the north-east and 1 (42 cm.) after 13 months on the west side of Strømø. Lastly, the 4 mentioned below have wandered a distance of at least 60 miles to the west or south:

In the course of 3 months 2, of 44 and 54 cm. initial size;
11 — 1, - 56 cm. initial size;
12 — 1, - 50 - —

1925 experiments.

Fig. 7 gives essentially the same picture as the previously mentioned experiments of the distinctly stationary character of the II and III groups during the first year. Relatively more than in the 1923 experiment were recaptured farther away from the marking place, which shows that the stock under investigation is in process of scattering out over the coastal bank at the end of the first year of experiments. But, when no fewer

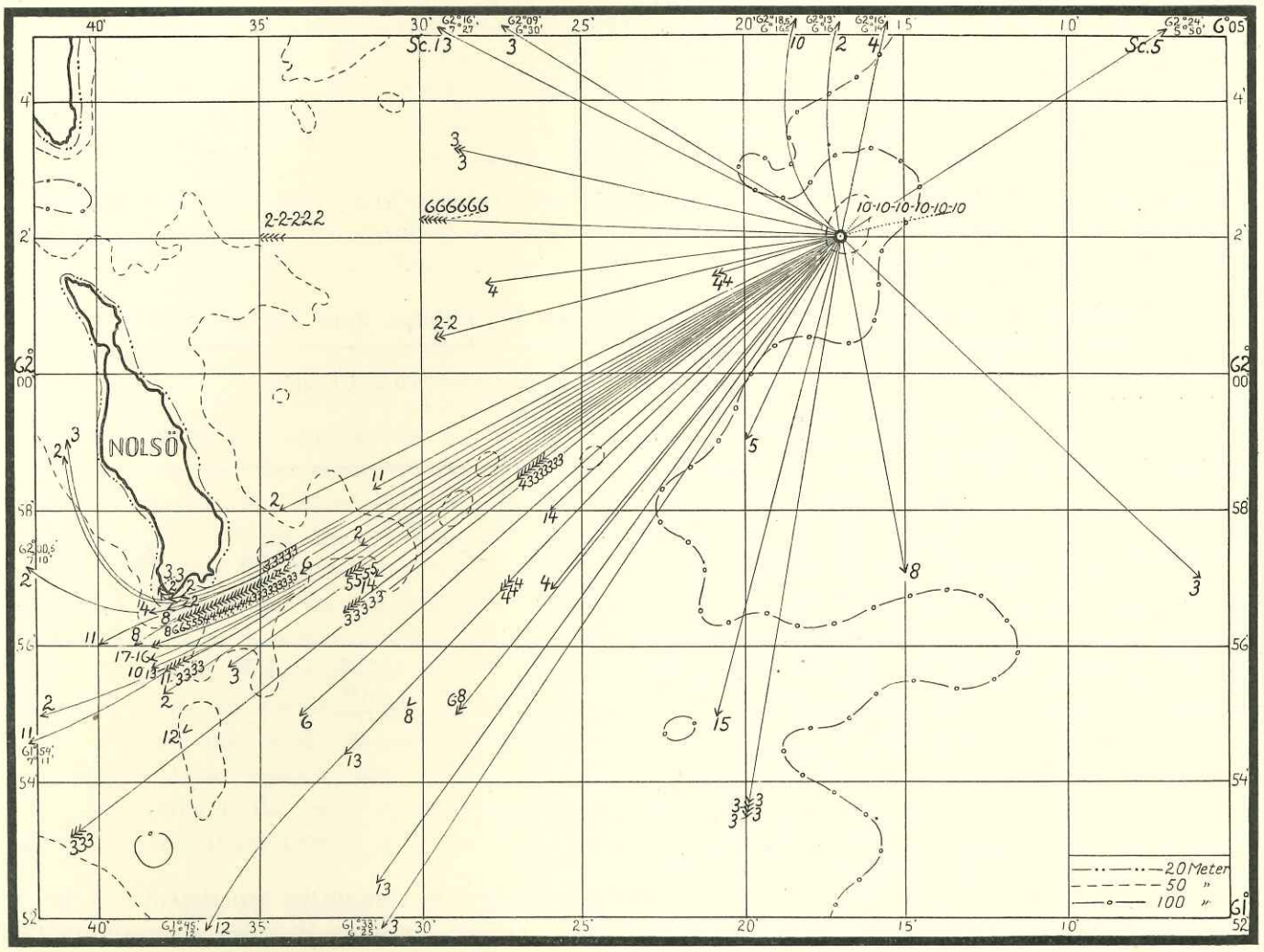

Fig. 6. Marking experiments with Cod. East of Nolsø. July and August 1923. Exp. II a.

than 7 of the 10 farthest migrants (for the most part fish of 50—66 cm. in the beginning) were recaptured east and north of the Norder Isls., this is probably due just as much to the intensive boat fishery in that area as to any definite direction of the wanderings. Of the 3 that have wandered farthest, 1 (52 cm. on marking) was retaken after 6 months about 20 miles away, east of Sandø, 1 (45 cm.) after 12 months west of Suderø and 1 (54 cm.) after 24 months west of Strømø.

6. Nationality of the fishermen.

Table 15 shows that three-fourths of the marked fish were retaken by boats from Nolsø and Skaale Fjord. Of the remainder boats from more northerly harbours took most in the 1923 experiment, a natural consequence of the position of this experiment. British, boats took respectively 4.8 and 16 per cent. of

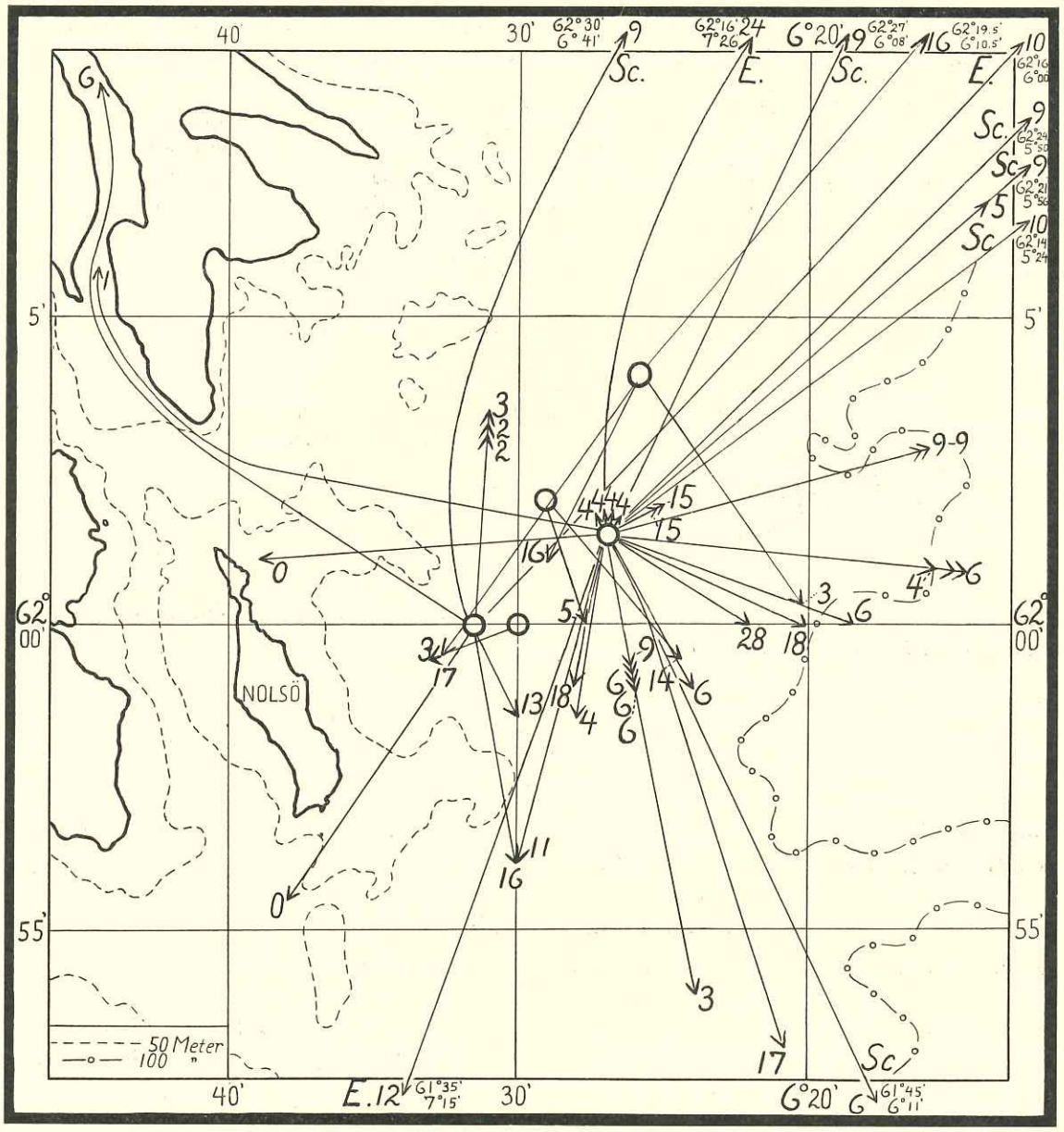

Fig. 7. Marking experiments with Cod. East of Nolsø. June and July 1925. Exp. II 1, 2, 4, 5, 7, 8.

Table 15. E. of Nolsø 1923 and 1925.

	Faroe fishing boats registered in																English S.T.	Scottish S.T.
	Nolsøfjord					Skaalefjord						Sund			Vaagø	Sandø			
	Nolsø	Thorshavn	Hvidenæs	Kalbak	Kollefjord	Næs	Tofte	Strænder	Glibre	Saltnæs	Solmund	Sælletræ	Avevig	Places N. of 62°10' N.[1])	Sandev.-Midvaag	Skopen	?		
1923	34	39	..	..	..	3	11	10	..	..	..	1	8	10	2	..	..	4	2
1925	12	27	3	2	1	1	4	3	1	2	1	..	..	1	..	1	..	4	7
Total...	46	66	3	2	1	4	15	13	1	2	1	1	8	11	2	1	2	8	9

[1]) Göte, Sydregöte, Svinø, Fuglø.

Total... Faroese 179 English 8 Scottish 9.

the recoveries in the experiments of the 2 years. These figures agree to some extent with the results from before 1914, but the average seem to indicate, with all due reservation, that the foreign fishery is increasing in intensity here.

	No. taken by Faroese	No. taken by foreigners	% taken by Faroese	% taken by foreigners
1909—12...	473	29	94.2	ca. 5.8
1923—25...	178	17	91.3	- 8.7

Further, the recoveries in the first year are distributed as follows:

Extraterritorial experiments	Recoveries in first year outside	inside
1923	42 Faroese	0
	5 British	0
1925	30 Faroese	5 Faroese
	8 British	
Intraterritorial experiments 1925	3 Faroese	6 Faroese
	2 British	

The foreign participation in the first years's recoveries outside the territorial limits has thus amounted to resp. ca. 11, ca. 21 and ca. 40 per cent.

III. Marking experiments E. of Sandø.

1. Locality and Date.

Between the 2nd and 18th of August 1923, 306 Cod altogether were marked 9 miles south-east of Skaalehoved (Sandø), at 61°46′ N. and 6°20′W.

2. Size of the fish marked.

The size of the fish marked is shown in the following table:

1923 August	cm. 45—49	50—59	60—69	70—79	80—89	90—92	total marked	total retaken
2	—	52	12	6	5	4	79	5
7	18	24	4	5	—	—	51	5
13	—	60	10	2	4	1	77	9
18	8	71	15	4	1	—	99	20+1
	26	277	41	17	10	5	306	39+1
retaken.....	4	28	5	2	0	0		

The peculiarity about this experiment is, that by far the great majority of the fish marked were 50—59 cm. in length (see Table above and Fig. 12).

3. Number of recaptures.

Altogether 13 per cent. were retaken or much less than in any of the Nolsø experiments and the experiment east of Sandø in 1912 (39.3 per cent., but with smaller fish and closer to land). The $^3/_4$ ths. of the recaptures fell in the first 6 months after marking; the last was retaken after 16 months had passed. The distribution over the different months was as follows:

Months	1	2	3	4	5	6	7	8	10	12	14	16
No. of recaptures	3	7	9	5	2	3	1	1	4	2	1	1

4. Growth.

Table 16 contains the apparently reliable data regarding the increase in length; as might be expected, however, only the information regarding the 50—59 cm. fish is of any value.

According to this the average increase in 10 months is ca. 10 cm., in 12—13 months about 14 cm., which agrees quite well with the conditions found in the near-lying Nolsø area in the same year.

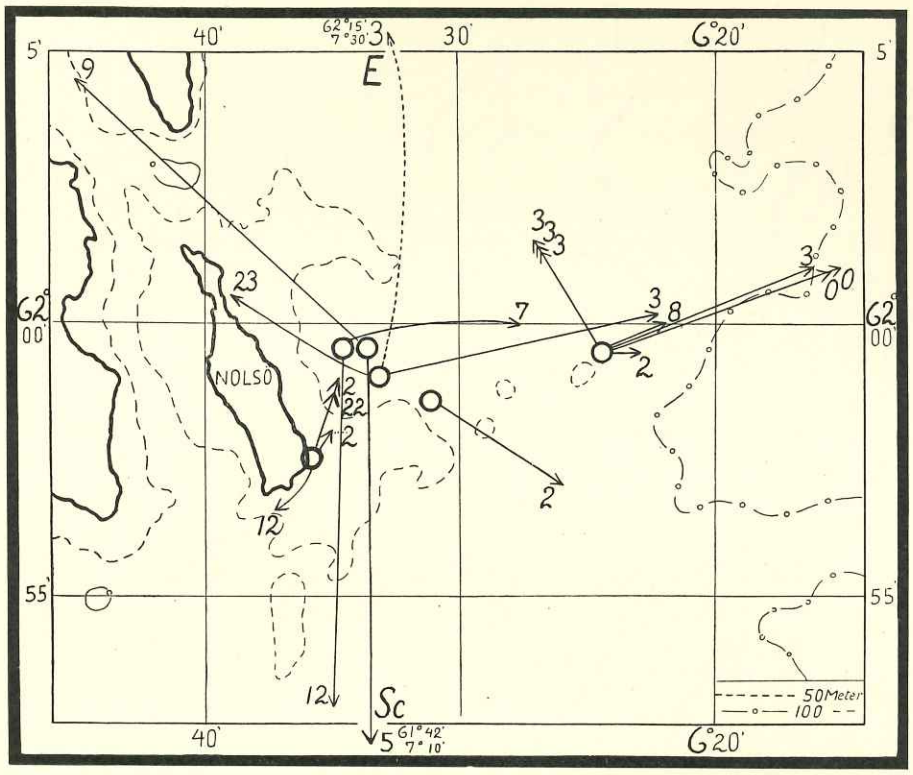

Fig. 8. Marking experiments with Cod. East of Nolsø. July 1925. Exp. II. 9, 10, 11, 12, 13 and 14.

The increase in weight of 1—1.5 kg. fish seems on an average to have amounted to about 1000 g. in 12 months, thus corresponding almost to a doubling of the weight in the first year of the experiment.

Table 16. Growth of liberated Cod E. of Sandø. Experim. August 1923.

Initial size in cm.	Recaptured in 1923 and 1924										
	Ultimo Sept.	October	November	December	Februar	March	April	June	August	Sept.	October
74.....	..	..	..	1	..	..	..	..	..	..	..
60—69.....	..	..	3	2	4	..	6	..	..	..	..
50—59.....	2—3	0	0, 0, 2, 1	0, 1, 2, 6, 12	0, 1, 3	1	..	5, 8, 10, 16	14	14	13
45—49.....	..	..	1, 4, 5	1	..	..	..	..	..	..	..

5. Migrations.

About two-thirds of all recaptured fish were taken within the area: marking station — Sandø — Nolsø — Husagrynna, thus less than 15—20 miles away, and distributed over the whole period of the experiment.

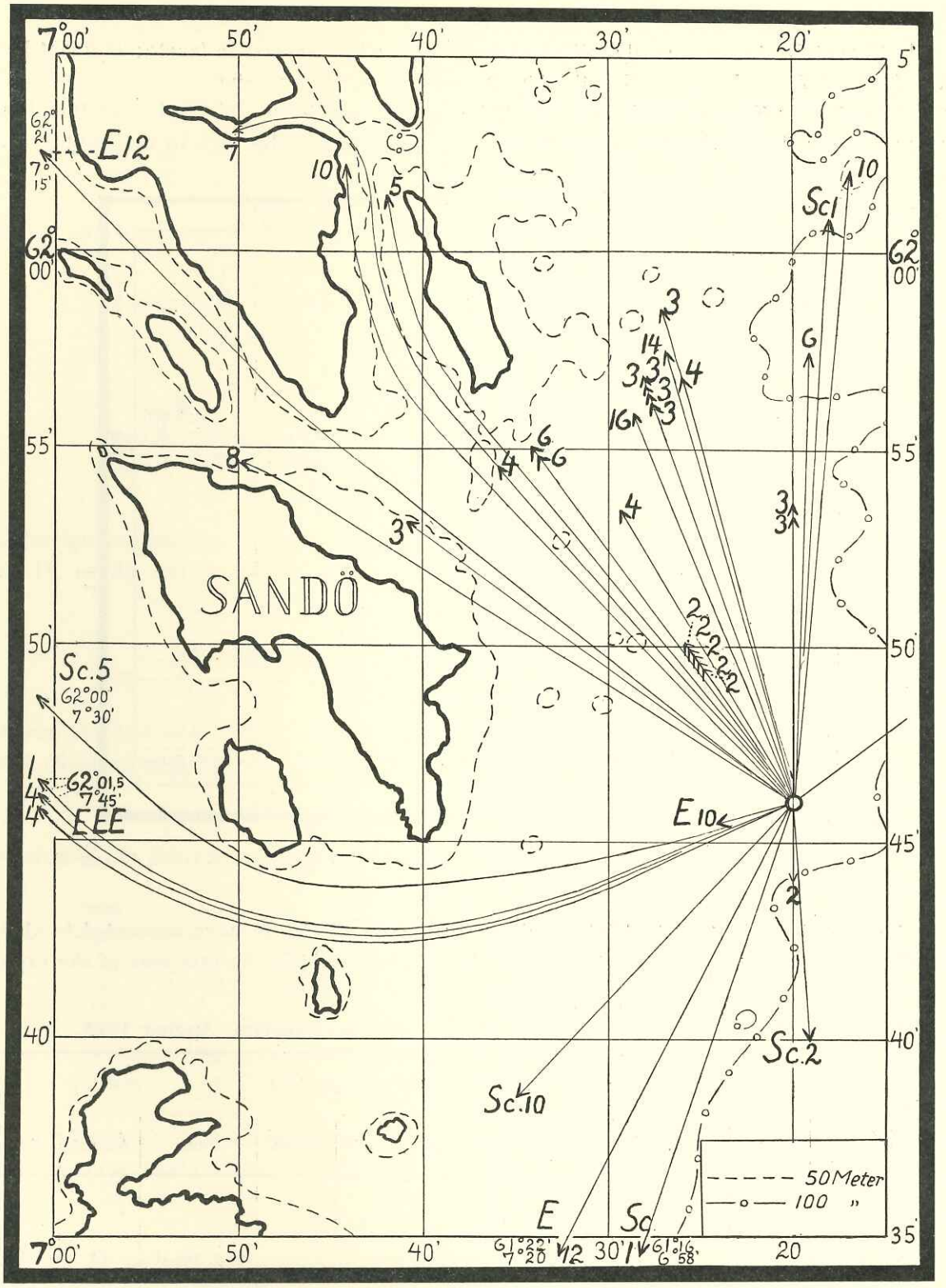

Fig. 9. Marking experiments with Cod. East of Sandø. August 1923. Exp. III.

The recoveries farther away from the marking place are mainly divided into 2 groups: the first group (3 specimens) round the south point of Suderø, thus at least 30—40 miles away and another group (4 specimens) from the west side of the islands round Myggenæs, all caught by British fishermen and at the

same time the only recovery on the west side of Strømø. These farthest wanderers among the recaptures were taken mainly in the first half-year of the experiment and also 12—13 months after marking. As the following summary shows, these specimens belonged in most cases to the smaller fish in the experiments.

No. of months in sea	1	2	3	4	5	12	13
Initial size in cm.	52	50	47	52	69	50	50
— — -	—	—	—	56	—	—	—

Taken altogether this experiment thus seems to indicate, that the stock, especially the 50—60 cm. Cod (chiefly III group), is beginning to spread out slowly over the coastal bank, in part closer to the land. More exactly, of the 39 recoveries only 7 occur within the territorial limits (marking place about 5 miles outside these).

6. Nationality of the fishermen.

The Faroese vessels which gave recoveries from this experiment all belong in Nolsø Fjord and adjacent waters to the north (Kalbak and Skaalefjord).

Thorshavn	Nolsø	Tofte	Straender	Avevig	Kalbak		Faroese boats
12	3	5	2	1	2	=	26

British vessels, i. e. 9 Scottish and 5 English steam-trawlers, caught 14 of the fish marked, or 35 per cent. of all recaptures and about 44 per cent. of the recaptures outside territorial waters.

IV. Marking experiments W. of Sandø.

1. Locality and Date.

In July—August 1923 larger fish to the number of 171 were marked on the coastal bank (Guttagrynna) about 6 miles west of Sandø; ca. 61°55′ N., 7°10′W. 60—90 m.

2. Size of the fish marked.

The fish were somewhat smaller than in the experiments here in 1912—13 (loc. cit. p. 63), when about one-third were over 70 cm. in length.

cm.	40—49	50—59	60—69	70—79	80—89	90—99	105	
No.	35	64	41	17	7	6	1	= 171

3. Number of recaptures.

Only 16, or about 9.3 per cent., were recaptured altogether, distributed as follows:

Months after marking	2	3	4	7	8	9	10	13	14	20
No. of recaptures	2	1	1	5	1	1	2	1	1	1
Initial size in cm.	50	64	50	42	50	50	44	53	64	42
— — -	70	—	—	49	—	—	64	—	—	—
— — -	—	—	—	51	—	—	—	—	—	—
— — -	—	—	—	53	—	—	—	—	—	—
— — -	—	—	—	74	—	—	—	—	—	—

The initial sizes up to 74 cm. were very evenly represented in the recaptures.

4. Growth.

The increase in length (in cm.) can only be noted in the following cases; the remaining measurements are defective.

Initial size cm.	Number of months in sea					
—	3	4	7	10	14	20
70	4	—	—	—	—	—
64	—	8	—	—	13	—
50—51	—	6	2	15,5	—	—
42—49	—	—	9.1	—	—	27

Weight increase is shown in a doubling of the initial weight in 10—14 months with respectively ca. 1200 and ca. 2500 g. and an increase by four times in 20 months of one fish 700 g. (increase 2500 g.). These few data, as will be seen, show a rate of growth in most cases which is not behind that of the good growing specimens in the Nolsø experiments.

5. Migrations.

Of the 16 recaptures 11 were taken less than 10 miles away from the marking place; and of these 4 after 7 months, and 3 respectively 10, 14 and 20 months afterwards (44, 64 and 40 cm. in length); 4 were retaken about 20—25 miles away, one of these at Myggenæs (9 months; 50 cm.) and 3 east of Strømø, namely 2 in Nolsø Fjord (8 and 13 months; 50 and 53 cm.) and another 5 miles east of Nolsø (10 months; 64 cm.), all measurements referring to the initial size.

Lastly, in 2 months after marking a specimen of 50 cm. was recaptured at the south end of Suderø, a distance in a straight line of about 35 miles. Only 3 of the 16 recaptures were taken inside the territorial limits (marking place 6 miles from land).

6. Nationality of the fishermen.

To boats from Vaagø, Sandø and Hestø, which lie nearest the place of experiment, are due 9 of the 16 recaptures, to fishermen from Thorshavn and Skaalefjord the 3 most easterly recaptures. British vessels, 3 English and 1 Scottish, have reported the 4 remaining captures, corresponding to 25 per cent. of the total (or to about 31 per cent. of the recaptures outside the territorial limits). Considering only the recaptures within 12 months after marking, the share of the British fishermen amounts to about 38 per cent., thus distinctly more than in the Nolsø experiments, but somewhat less than in the large experiment at Guttagrynna (ca. 50 per cent.) in 1912 and 1913.

V. Marking experiments W. of Strømø.

1. Locality and Date.

On May 16th and 17th 1927, 142 Cod were marked on the west side of Strømø, $^1/_2$—2 miles from land, between Myling and Saksen; positions: 62°14′—62°18′ N. and 7°13.5′—7°17.8′ W.

In July 1912 some few fish were marked within this area; more to the south, round Mulen, about 400 specimens in July—August 1911—12 (l. c. p. 42).

2. Size of the fish marked.

The fish marked were larger here than in the experiments discussed above (1923 and 1925) and also larger than in 1911 and 1912. Of the 142, 122 were 60—90 cm. long, as indicated in the following summary.

1927	cm.						
May 15—16.	50—59	60—69	70—79	80—89	90—99	marked	retaken
	12	44	41	37	8	142	30
retaken	1	9	9	9	2		

In the 1911/12 experiments here the majority were composed of the II group.

3. Number of recaptures.

Altogether 30 specimens or 21.1 per cent. were recaptured, respectively 18.4 and 22.1 per cent. for May 16th and May 17th.

This percentage is scarcely half as great as in the 1911 experiments with the II group, but agrees with the 1912 results almost; in that year the 50—70 cm. fish constituted a larger proportion of the stock under experiment. The recaptures were arranged over the different months after marking as follows:

Months	0	1	2	3	4	9	12	13	14	15	19	23
No. of recaptures	4	10	2	2	1	4	1	1	2	1	1	1

Here — as in Nolsø Fjord — nearly two thirds of the recoveries were made within 4 months after marking.

4. Growth.

The few trustworthy results on the growth in length given by the experiments are brought together in the following summary.

Table 17. Growth in cm. of Cod liberated W. of Strømø medio May 1927.

Initial size in cm.	Recaptured in						
	(1927)		(1928)		(1929)		
	July	August	Februar	March	July	November	April
59	..	..	..	..	..	..	..
60—69	..	..	..	6	7	..	6
70—79	4	3	10.3	..	..	3	..
80—89	3	..	7	..	..	..	..

Thus in 9 months 3 specimens (from 62, 73 and 88 cm.) show a growth in length of about 7—8 cm. (on an average).

For the sake of comparison it may be mentioned, that 2 Cod of 60 cm. marked in July 1912 at Myggenæs grew 11 and 15 cm. in 12 and 15 months and 2 of 61 and 63 cm. marked in June 1912 at Myling each grew 10 cm. in 10 and 13 months.

The few specimens (of 60 cm.) taken 1—2 years after marking seem to have grown much less comparatively. For a specimen of 59 cm. the growth in 17 months was calculated to be 17 cm. from the weight on recapture (= 4000 g.).

5. Migrations.

The distribution of the recaptures (Fig. 10) points to a fairly well-marked scattering of a part of the stock already in the first months of the experiment, especially to the west and south; 2 are given as retaken at Suderø two (67 cm.) and nine (88—95 cm.) months after marking, 1 on Sandø Bank after 14 months (65 cm.) and 1 is reported by a Grimsby trawler to have been retaken on Faroe Bank after three months (64 cm.). Assuming the correctness of the position given this is the first recorded wandering hitherto of a marked Cod from the islands to the Bank.

On the marking place itself or less than 5 miles away from it 7 were retaken within 2 months, but thereafter none until 5 marked fish were recaptured here 1—$1^1/_2$ years afterwards. Taken as a whole the following recaptures were made in this area.

No. of months in sea.....	0		1					12	13	14	15	18
Initial size.....	83*	84*	67*	74*	75*	82*	84*	88*	66*	64*	59	76*
Size on recap. (cm.)	—	—	—	—	—	—	—	—	73	—	—	79

(The 11 marked * were retaken within the territorial limits).

Compared with the distribution of the recaptures in the 1911 experiments (mainly with the II group; see Fig. 15, p. 48 in the oft-cited report on the earlier experiments), which showed very stationary conditions

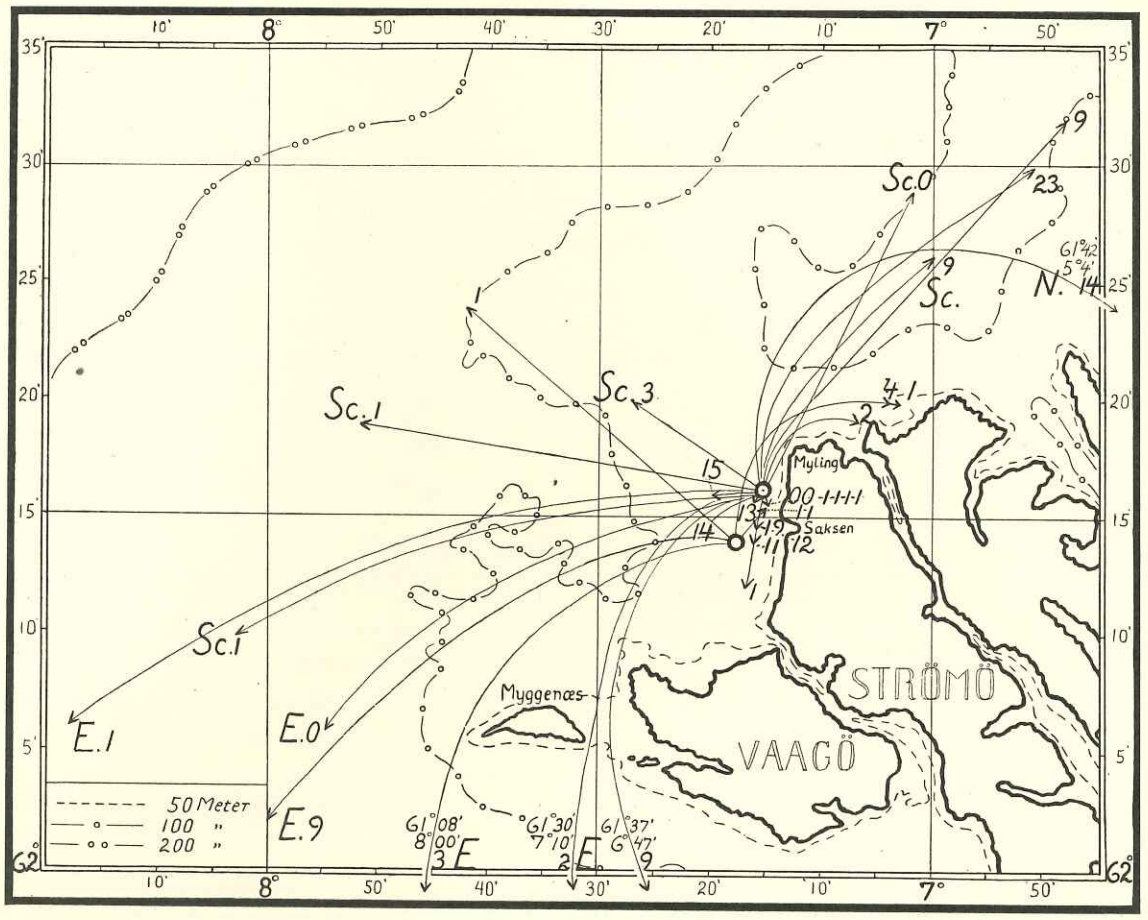

Fig. 10. Marking experiments with Cod. West of Strømø. May 1927. Exp. V.

during the whole of the first year after marking, we again obtain a characteristic picture of the difference it makes, whether we are dealing with the II group or the somewhat older fish.

On or near the marking places and, like these, within the territorial limits, 11 altogether were retaken, as already noted. Of the recaptures farther away 4 were likewise retaken within the limits, namely, 3 at the north end of Østerø after 2—4 months and 1 at the north end of Suderø (after 9 months; 88—95 cm.).

6. Nationality of the fishermen.

From the two northernmost places in the Sounds of Ejde and Haldersvig we have 11 recaptures by boats of those places. Of the remainder 5 were retaken by vessels from other Faroese districts; 3 are noted as taken by Faroese fishermen, home-place not recorded, whilst lastly 11 were retaken by foreign fishermen, 1 Norwegian, 5 English and 5 Scottish:

Faroese	English	Scottish	Norwegian	Total
19	5	5	1	30

VI. Marking experiments NW. of Viderø.

1. Locality and Date.

In 1927 during the spring fishery north of the islands — the principal season and principal grounds for the motor-boat fishery — a series of the larger Cod, which are in the majority in the catches here, was successfully marked. On the 17th, 25th and 26th of March of that year altogether 198 Cod were liberated N.W. of Viderø i. e. N. of Kalsø-Østerø about 5—12 miles from land in about 80—120 m. depth.

2. Size of the fish marked.

cm.	40—49	50—59	60—69	70—79	80—89	90—99	100—107	Total
Nos.	2	8	33	64	77	13	1	198

Practically all were over 50 cm. in length and three-fourths over 70 cm.

3. Number of recaptures.

In the course of two years 28 marked fish or ca. 13.1 per cent. were retaken, 18 of these in the first five months. After 12 months and again after 23—24 months 4 and 2 specimens respectively were retaken near the marking place. The majority of the recaptures referred to the larger fish.

Initial size in cm.	57	60—69	70—79	80—89	99
No. of recoveries	1	1	8	15	1

4. Growth.

Unfortunately, in these experiments also but few measurements are of any use.

No. of months in sea	$2^1/_4$	3	4	5	8	9	12
Initial size	Increase						
72—79 cm.	1.7*	(8.5)	—	2.5*	1.7*	—	2.5* 6
80—87 -	2.2	2.8*	4.5* 3*	2.0	—	7.0*	—

Those marked * were measured after delivery in British ports, thus some days after recapture.

The growth increase in most cases seems to have been 0.5—1 cm. per month on an average, in some cases still less, agreeing with what had been found in the earlier experiments, e. g. on Sandø Bank in 1912, for Cod greater than 70 cm. on marking (l. c. p. 69). But the material is not suited to detailled treatment.

5. Migrations.

As the experiment here was made with large Cod marked on or near the spawning places in the early spring, we should expect to find the stock much less stationary than in the experiments made chiefly with younger fish. This is confirmed also by the distribution of the recaptures (Fig. 11).

7 of the 26 certainly were retaken within a radius of 10 miles, but of these only 3 in the course of the 1st month whereas 3 were not retaken until the 12th and 1 in the 24th month after marking. This gives quite a different picture from the experiments illustrated before. The remaining recaptures in the first months after marking show a considerable scattering of the stock out over the coastal bank, especially to the west and south. Here we are dealing with specimens of 76—84 cm. initial size; 4 of these were retaken within territorial limits, 2 at Fuglø and Bordø and 2 between Skuø and Lille Dimon.

6. Nationality of the fishermen.

Where the harbour is stated, 7 of the 12 recaptures by Faroese fishermen were by boats from Østerø and Bordø, the remaining 5 by boats from Sandø, Skuø, Strømø and Suderø. We have the following recaptures from within territorial limits.

No. of months in sea	2	3	3	3	5
Initial size in cm.....	81	86	76	82	85
	(Bordø)	(Kunø)	(Skuø)	(Dimon)	(Fuglø)

British fishermen returned 11 or 42 per cent. of all recaptures (corresponding to about 46 per cent. of recaptures in first year). Thus, the participation of foreign fishermen is large, just as was the case in earlier experiments with the larger fish outside the territorial limits (loc. cit. p. 82).

Recaptures by	Faroese	English	Scottish boats
	15	5	6

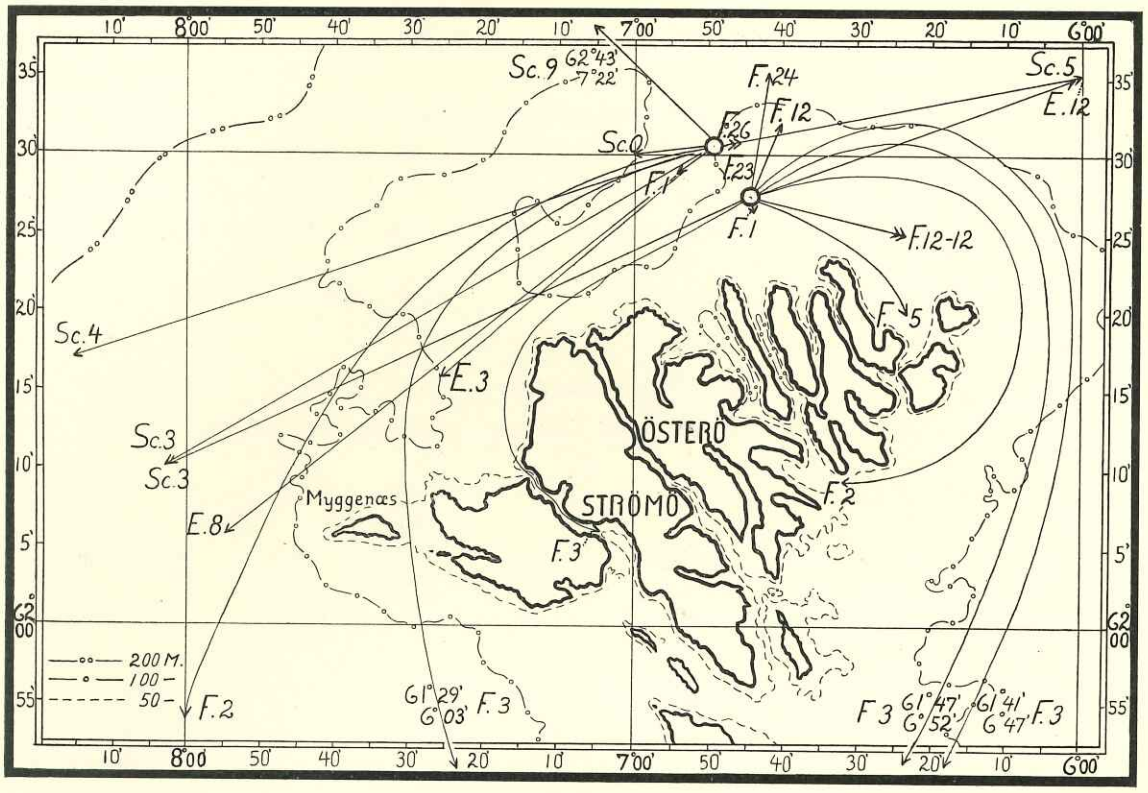

Fig. 11. Marking experiments with Cod NW. of Viderø. March 1927. Exp. VI.

VII. Marking experiments N.E. of Viderø.

1. Locality and Date. On May 7th, 1927, Cod to the number of 40 were marked off the N.E. coast of Viderø, about 2 miles from land at 62°22.7′ N., 6°27.5′ E.

2. Size. The fish were of very different sizes, but all over 55 cm.

cm.	55—59	60—69	70—79	80—89	90—93	Total
marked	17	7	2	11	3	40
recaptured	7	2	1	4	—	14

3. Of the recaptures, 14 in all or ca. 35 per cent., 11 occurred already in the first month, 2 respectively 5 and 10 months after marking, whilst the date of recapture of the remaining is uncertain (23 months?).

4. But few growth determinations can be made from the material.

Months in sea	$1^1/_2$	$1^2/_3$	10
Initial size	82	57	84
increase cm.	2	1.5	4

These agree with earlier results.

5. The migrations are but little extensive in the mainly short period; 9 were taken off the north end of Viderø (all under 2 months), 1 was given as taken in "Nordhavet" the local denomination for the region north of the north islands, 10 months after marking (84 cm.), a find that agrees with several similar in the experiments north of Viderø. Only 2 recaptures, both from British vessels, come from farther away, 1 at Myggenæs according to the data (after $1^1/_2$ months; 57 cm.) and 1 farther to sea south of Suderø (after 5 months; 86 cm.).

6. The nationality of the fishermen was Faroese in 12 cases, almost all from Viderejde, 1 only from Klaksvig; 1 English and 1 Scottish represented the foreign recaptures, corresponding to ca. 14 per cent. of all recaptures. This is a fairly low value by comparison with the experiments farther out to sea (see p. 26), but the material is insufficient.

Only 2 of the recovery places noted fall within the territorial limits.

VIII. Marking experiments N. of Kalsø 1932.

On April 18th and 29th and again on May 18th, 1932, large Cod to the number of 226 in all were marked north of the islands; positions 62°31′ N., 6°52′W., 55 fm. and 62°34′ N., 6°49′W., 60 fm. Only fish of 70—105 cm. were marked. The experiment cannot yet be regarded as finished, but up to date we have had 40 recaptures; only 6 Faroese, but 34 British, 14 English and 20 Scottish.

Most were retaken north and north-west of the islands.

The recaptures are distributed as follows in the first year:

No. of months in sea	0	1	2	3	4	5	6	7	8	9	10	11
No. of recaptures	1	9	6	2	2	0	3	1	2	2	2	7

In agreement with the experiments north of Viderø, the numbers rise towards the end of the first year and the recoveries in the majority of cases were made in the area round the marking place.

C. Concluding remarks.

1. With regard to the size of the marked fish, Fig. 12 shows that the experiments of 1923—32 may be grouped together just as in the earlier experiments (1909—13; l. c. p. 77).

In Group I (Nolsø Fjord experiments) the sizes below 50 cm. dominate. In Group II the Cod of 50—60 cm. are almost as numerous as the smaller (experiments east of Nolsø and west of Sandø). To this group also belongs the experiment east of Sandø, where but few fish are below 48 cm.

In Group III lastly the great majority are over 60 cm., in the 1932 experiments all were even over 70 cm. (experiments on the coastal banks west and north of the islands farther from land).

Both the II and III groups are relatively better represented than in the 1909—13 experiments; nevertheless the Nolsø experiments (1923 and 1925, east and west of Nolsø), as in the earlier years, embrace by far the largest numbers (about 1000 in about 1870).

2. The recovery percentages for each of the three groups mentioned have the following values:

Group	I	II	III
		% recovered	
1923—1927	40.6	23.3	18.4
1909—1913	50.4	23.3	16.6

Though the figures for the later experiments are based on a total of only 500 recaptures against 1550 for the earlier, yet both series show quite distinctly the same picture of decreasing number of recaptures with increasing size of the fish marked.

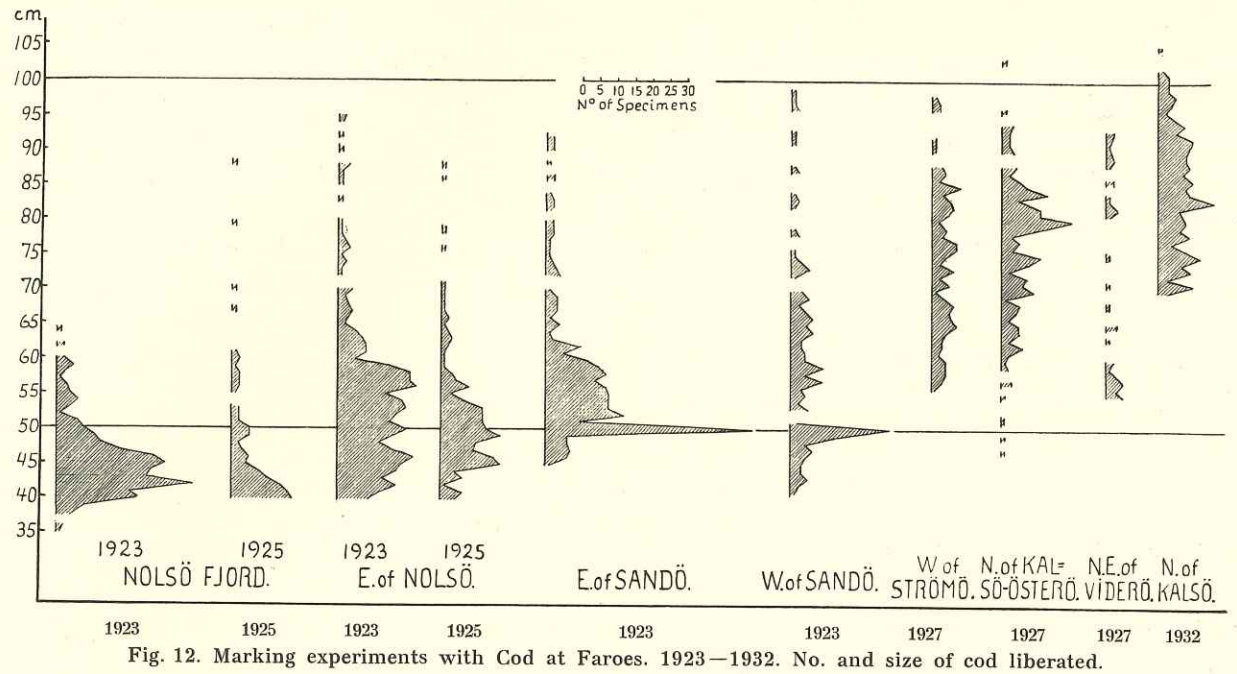

Fig. 12. Marking experiments with Cod at Faroes. 1923—1932. No. and size of cod liberated.

As in the earlier investigations the intensity of the fishery proves to have been strongest in Nolsø Fjord, though somewhat less in 1923—25, and weakest in the experiments with the largest fish farthest from land. However, what the experiments indicate with regard to the intensity of fishing and the proportions of Faroese and foreign fishermen engaged in the fishery at the islands, will be discussed on a later page (p. 30).

3. The distribution of the recaptures month by month can be seen from the summary of all the experiments; over half (ca. 310) of the recaptures were made in the first 4—5 months after marking; then the monthly figures greatly decrease, until the recoveries almost cease entirely with the expiry of the second year of the experiment. Only a single specimen was taken as late as 28 months after marking.

Table 18. Recaptures of marked Cod. Faroes 1923—27.

Experiments in	Total liberated	Number of months between liberation and recapture																											Total recaptured	% recaptured
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
Nolsø Fjord	411	8	21	43	23	14	8	3	5	6	3	2	4	3	4	6	7	2	2	2	..	1	1	..	..	..	..	..	..	..	168	40.9
E. of Nolsø	603	4	2	22	49	24	12	19	2	8	9	10	5	7	4	3	3	4	3	2	..	..	..	1	1	1	..	..	..	1	196	32.7
E. of Sandø	306	0	3	7	9	5	2	3	1	1	0	4	0	2	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	39	12.7
W. of Sandø	171	0	0	2	1	1	..	..	5	1	1	2	..	..	1	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	16	9.3
W. of Strømø	142	4	10	2	2	1	..	..	..	..	4	..	..	1	1	2	1	..	..	..	1	..	..	..	1	..	..	..	..	..	30	21.3
NW. of Viderø (= N. of Kalsø-Osterø)	198	2	2	4	7	1	2	..	..	1	1	..	..	4	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	26	13.1
N.E. of Viderø	40	..	11	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1?	..	..	..	..	..	14	35.0
Total...	1871	18	49	80	91	46	25	25	13	17	18	19	9	17	10	13	11	7	5	4	1	2	1	1	4	2	..	..	..	1	489	26.2

Altogether 427 were retaken in the first year, about 60 in the second, against about 1400 and ca. 140 respectively in the earlier experiments. Comparatively speaking the second year recaptures were thus slightly

more numerous than in the earlier years, but this can scarcely be ascribed to the influence of an improved technique, especially as the 1923 experiments, in which the less resistant bronze marks were used (p. 30), have yielded most of the second year recoveries; besides the numbers are but small in the single experiments.

Recaptures in the third year are practically absent, in any case not more numerous comparatively than in the earlier experiments.

4. The nationality of the vessels which have returned the marked fish is displayed by the following summary of all the experiments.

Experiments	Total returned by vessels from			
	Faroes	England	Scotland	Norway
1923—27	432[1])	32	35	1
1909—13	1468	157	33	0

[1]) 11 with unreadable number included.

According to this the proportion of recaptures taken by the foreign fishermen has amounted to about 13.6 per cent. against ca. 11.4 per cent. previously, bringing all the experiments in each of the two periods together. The picture is different, however, if we consider separately the experiments outside the territorial limits (3 miles), where the Faroese and foreign fishermen work on a common footing and if we only take account of the recaptures in the first year.

The following scheme shows the number of recaptures in the first year in the extraterritorial waters, all experiments outside Faroese territory taken together:

	1909—13		1923—27	
	Faroes	Foreign	Faroes	Foreign
	227	76	101	41
			(1932) 5	33
Proportion by % taken by foreign fishermen of the extraterritorial recaptures	ca. 25.1		ca. 29.6 or ca. 41.1 (1932 incl.)	

The single experiments farthest to sea show to some extent even higher values for the foreign participation in the recaptures.

Faroe Bank (1910)	ca. 52.0 %
E. of Sandø (1923)	- 46.5 -
N. of Viderø (1927)	- 61.1 -
- - — (1932)	- 87.0 -

With regard to the intraterritorial experiments, as we might expect from the nature of the case, but few recaptures from outside the territorial limits are to hand for the first year, respectively 85 and 34 for the earlier and the more recent experiments. In spite of the small numbers, however, it can be said, that in these cases also the foreign fishermen have taken a large share in the recaptures, namely 60.0 and 58.9 per cent. respectively.

The marking experiments show with all clearness, that the intensity of the foreign fishing has increased from the years before 1914; in the areas investigated farther from land it exceeds in most cases that of the Faroese themselves. The experiments, however, are too few and scattered to allow the conditions to be fully illustrated in this manner. The rising intensity of the foreign fishing, suggested in the results of the experiments, is shown more clearly in the data of the available fisheries statistics.

Statistics.

Faroese catch at the Faroes

	Cod (tons)	Average catch kg of Cod pr. man × fish day (f. vessels only)	Total catch (tons)
1906—13 (average)	ca. 13,500	36,7	ca. 17,500
1914—18 —	- 11,700	45,9	- 13,700
1919—23 —	- 9,300	52,3	- 9,800
1924—28 —	- 5,300	47,8	- 5,500
1929	- 1,800	8,4	- 1,850
1930	- 2,080	48,1	- 2,160
1931	- 1,400	34,3	- 1,500
1932	- 4,200	21,6	- 4,500

British catch[1]) at the Faroes

	Cod (tons)	Average catch of Cod pr. day's abscence (S.T.)	pr. 100 h.'s fishing	Total catch (tons)
1906—13 (average)	18,140	kg. 844	tons —	35,000
1914—18 —	(7,200)	- (648)	- —	(14,040)
1919—23 —	13,700	- 817	- (14,5)	27,200
1924—28 —	29,060	- 844	- 13,0	50,400
1929	20,000	- 655	- 11,4	39,600
1930	23,900	- 705	- 13,0	46,100
1931	36,000	- 810	- 12,6	62,500
1932	32,200	- 685	- 10,4	65,000

[1]) cf. Sea Fisheries Statistical Tables; Ministry of Agriculture and Fisheries, London; and Fishery Board for Scotland, Sea Fisheries: Statistical Tables.

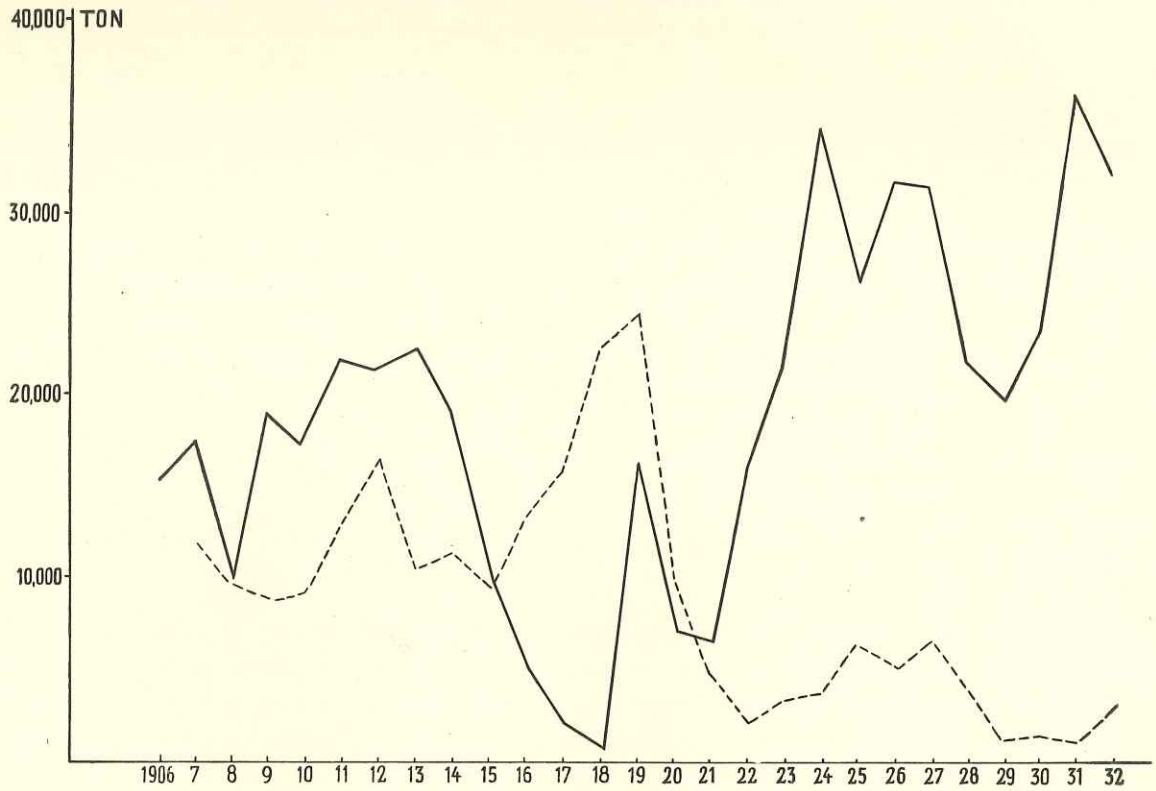

Fig. 13. Catch of Cod at the Faroes. 1906—1932.
- - - - - - faeroese catch.
———— british catch (takings).

The data for the Faroese catch have been taken from the annual Fiskeriberetning with the following emendations.

The catch for the vessels, recorded as "dry-salted fish", is recalculated to fresh, whole fish by multiplying by 2.4, whilst the weight of the boat catch, presumably given as the weight of the cleaned or gutted fish, is recalculated to whole fish by the addition of ca. 30 per cent.

The averages given for the 5-years periods and Fig. 13, which illustrates the amount of Cod taken year by year since 1907, show up the fact with great clearness, that whilst the Cod fishery of the Faroese in their home waters since the war years has been inconsiderable and only yielded about 4.2 tons in 1932 (against ca. 26 tons in 1919), the British fishery, and especially the Scottish trawl and line fisheries, has greatly increased since 1920. Thus, in 1932 the English and Scottish vessels took about 65,000 tons of fish, mainly Cod, Haddock and Green Cod, at the Faeroes, whereas the native catch hardly amounted to $^1/_{14}$th of this quantity. The fishery of other countries is of quite minor importance.

Among other reasons for this remarkable condition we may refer more especially to the different kinds of fishing employed by the two countries. In contrast to the intensive British fishery by steamer we have the primitive line-fishery from cutters of the Faroese; without wishing to disparage the valuable qualities of this method of fishing one may say, that neither it nor the long-line fishery from motor-boats has much chance in an area where steamers work. Add to this, that hitherto the Faroese have been fitted out to obtain the raw materials for salting, that is Cod-fish of certain definite sizes, and according to the experience of the Faeroese fishing vessels boat-loads of these can be taken in shorter time at Iceland and Greenland (spring and summer) than seems to be the case in the waters round the Faroes.

The beginnings of a seine fishery and an increasing interest in the production and exchange of fish-products, delivered in the fresh condition, may perhaps lead to some extent to a change in the method of fishing and thus raise the value of the home fishery in the islands themselves.

5. For the elucidation of still obscure points in the biology of the adult fish (those spawning for the first time and the older) endeavours should be made to get as many of these as possible (at least 500—1000 specimens) marked at the spawning places round the islands.

A successful outcome for the experiments requires the interested cooperation of the fishermen, this is indispensable and should again be sought for and organized in the manner most suitable to the ends desired.

Summary.

1. In 1923, 25, 27 and 1932 (March—August) about 2000 Cod in all were marked at the Faroes; of these about 1000 in the waters west and east of Nolsø, about 300 east of Sandø, about 310 off the west coast and about 450 north of the islands. In the earlier years 1909—1913 about 4,095 Cod in all were marked in the coastal waters round the islands.

2. In most of the experiments the fish marked were chiefly below 60 cm. in length, in Nolsø Fjord even below 50 cm.; on the other hand, the fish marked north of the islands were larger, about 70—100 cm.

3. The total number of recaptures was about 500 or ca. 26 per cent., as the 1932 experiment cannot yet be regarded as finished and is thus not included here. More were recaptured in the earlier experiments, namely ca. 40 per cent. altogether. The reasons for the decreased number of recaptures may possibly have been technical failings in the conduct of the experiments and less interest for reporting the catches of marked fish, but the main reason is presumably to be sought for in the reduced intensity of the home fishery since 1921.

In both series of experiments most of the recaptures fell in the first 6 months after marking. In the 2nd year only 63 in all were returned and later only one single specimen (28 months after marking). It has thus not been possible to follow the experiments more than 2 years and even from the second half of the second year but few recaptures are to hand.

Like the earlier the new experiments show that the fishery has been most strongly pursued close to land after the smallest fish (2-year olds). For example, in Nolsø Fjord ca. 34 per cent. of the experimental

stock was retaken in the first year, east of Nolsø ca. 28 per cent., west of Strømø (fish of ca. 55—90 cm. in length) ca. 17 per cent., whereas in the experiments north of the islands, about 6—12 miles from land, with fish chiefly 70—100 cm. in length, only about 14.2 per cent. of the experimental stock was recaptured in the first year.

4. Whilst the Faroese fishermen, as in the earlier experiments, have taken by far the most of the recaptures in the experiments near land (intraterritorially), foreign boats, English and Scottish, have taken about 41 per cent. of the first year's recaptures in all experiments outside the territorial limits, in some few considerably more ca. 61 per cent. (1923) and 87 per cent. (1932), and in each case considerably more than in the 1909—13 experiments. Even if the experiments in question are small, the impression they give, of increasing intensity (relatively or absolutely) in the foreign fishery, especially the Scottish, agrees well with the data of the fisheries statistics. According to the latter the British fishermen caught about 20 million kg. of Cod in the years just before 1914 against about 30 million kg. on an average in 1924—32. At the same time the participation of the Faroese in their home fishery, at least so far as the larger vessels are concerned, has steadily become less since 1920 and the quantities taken (by vessels and boats) has now declined to but a few (in 1932 about 4.2) million kg.

5. As several of the experiments have been limited and many of the reports of recaptures are defective, the information regarding the growth given by the material can only be considered as supplementary to that published from the 1903—13 experiments. In the 2-year old Cod (II group) we find an average yearly increase varying from about 13 to 16 cm. in the different years, with 25 and 35 cm. as maximum for 11 and 17 months respectively (weight increase 1—$1^1/_2$ kg. in the first year).

Cod of 50—65 cm. (chiefly III group) show in the first year an increase monthly of about 1 cm. on an average, a few larger fish (ca. 85—88 cm.) about 0.4—1 cm.

6. Only the 2-year old Cod have proved, as in the earlier experiments, to be extremely stationary.

On the other hand, the stock of the somewhat older (50—70 cm.) has begun to scatter already a few months after marking. This is still more marked in the case of the largest specimens (> 70 cm.) in the spring experiments north and west of the islands, but after about a year (in one case after 24 months) the stock in these experiments seems to have collected again at the place of marking, a condition that presumably stands in connection with the spawning.

In one case a marked fish is reported to have been taken on the Faroe Bank, corresponding to three cases of wandering from the islands to the Bank and the reverse in the 1909—12 experiments. One specimen is given as taken so far south as in the Northern North Sea (59°10′N., 3°45′E.); it has not been possibly however to get this statement confirmed, and no respect is paid to it therefore in the foregoing. Should it prove to have been correct, it is in any case the first report of recapture outside of Cod from the Faroe region.

Dansk Resumé.

1. I Fortsættelse af Mærkningsforsøgene med Torsk i 1909—13[1] har Kommissionen for Danmarks Fiskeri- og Havundersøgelser i 1923—1932 ladet foretage en ny Serie Mærkningsforsøg i færøske Farvande.

2. Der mærkedes ialt ca. 2.000 Torsk (tidligere ca. 4.100 Stk.), deraf Halvdelen i Farvandet omkring Nolsø. Iøvrigt mærkedes Torsk Øst og Vest for Sandø samt i "Nordhavet" under Foraarsfiskeriet i 1927 og 1932, 5—10 Kvartmil af Land.

Mærkningen foretoges fra lejet Fartøj dels af "Dana"s Fører, Kapt. G. HANSEN, dels med Bistand af Hr. Navigationslærer JOHN CHRISTIANSEN, Thorshavn.

3. Til Mærker er i de fleste Tilfælde brugt Ebonitknapper, fæstet med Sølvtraad paa Gællelaget. Disse Mærker holder sig bedre i Søvandet end de tidligere anvendte Bronceplader.

Alle Fiskene toges med Haandsnøre, mærkedes, maaltes og sattes straks i Frihed igen.

4. Fig. 12, Side 28 viser Størrelsen af de mærkede Fisk, hvorefter Forsøgene ligesom de tidligere lader sig fordele i 3 Grupper.

I Gruppe I (Nolsø-Fjord-Forsøgene) dominerer Størrelserne under 50 cm. I Gruppe II er Fiskene paa 50—60 cm omtrent lige saa talstærke som de mindre (Forsøgene Øst for Nolsø og Vest for Sandø). I Forsøget Øst for Sandø er kun faa Fisk under 48 cm.

I Gruppe III er endelig de allerfleste over 60 cm, i 1932-Forsøgene endda alle over 70 cm. (Forsøgene paa Kystbankerne Vest og Nord for Øerne fjernere fra Land.)

Begge de sidste Grupper er forholdsvis talrigere repræsenterede end ved 1909—13-Forsøgene, men iøvrigt udgør Nolsø-Mærkningerne (1923 og 1925) ligesom tidligere de største Forsøg (ca. 1.000 af ca. 1.870, eller ca. 2.000 Forsøget i 1932 iberegn.).

5. Antallet af Genfangster i Procent af Antallet af mærkede Fisk — beregnet under eet i hver af de 3 Grupper Forsøg — er følgende:

Forsøgsgruppe	I	II	III
% genfanget i 1923—1927	40,6	23,3	18,4
— i 1909—1913	50,4	23,3	16,6

1923—27-Forsøgene omfatter ialt kun ca. 500 Genfangster imod 1.550 i de ældre Forsøg. Alligevel viser begge Rækker dog klart aftagende Genfangsthyppighed d. v. s. Fangstintensitet med tiltagende Størrelse af Forsøgsdyrene.

Af Opgørelserne Side 7 og 28 fremgaar:

1) i Farvandet indenfor Nolsø tages aarligt indtil Halvdelen (i enkelte Forsøg endda ca. 70 %) af den der opvoksende Bestand af 35—50 cm ("2-aarige") lange Torsk,

2) omkring Sandø og Øst for Nolsø opfiskes aarlig ca. $^1/_4$—$^1/_3$ af Bestanden af de for største Delen 2—4-aarige Fisk, som her mærkedes,

3) endelig tages paa Bankerne i Nordhavet længere fra Land fra $^1/_6$ til ca. $^1/_4$ af de ældre mærkede Torsk.

Mere end Halvdelen af Genfangsterne bl. a. i Nolsøfjord og ved Forsøgene Vest for Strømø sker i

[1] Beretning om Forsøgsresultaterne er trykt i Meddel. fra Komm. for Havundersøgelser, Serie Fiskeri, Bd. 5 Nr. 2, 1916.

Løbet af de første 4—5 Maaneder efter Udsættelsen under det intensive Baadfiskeri her; ved Kalsø-Forsøgene er Fangsterne mere jævnt fordelte Aaret over. Derefter synker Antallet pr. Maaned stærkt indtil Udgangen af Forsøgets 2det Aar; kun een eneste toges saa sent som 28 Maaneder efter Mærkningen.

Ialt toges i 1ste Aar 427, i 2det Aar ca. 60, mod ved de tidligere Forsøg henholdsvis ca. 1400 og ca. 140. 2det Aars Genfangster blev saaledes forholdsvis lidt flere end tidligere, men Tallene er iøvrigt kun smaa ved de enkelte Forsøg.

6. Det, Forsøgene oplyser om Torskens Vækst, bekræfter og supplerer det tidligere fundne. Beklageligvis er der langtfra altid givet tilstrækkelige Oplysninger om de genfangne Fisks Længde, Vægt o. s. v., hvad i høj Grad forringer Nytten af Experimenterne. Man maa indtrængende henstille, at de færøske Fiskere ved de kommende Forsøg giver deres Bidrag til Opgavens Løsning ved nøjagtige og fuldstændige Meddelelser om Fangst af mærkede Fisk. Uden Samvirken med Fiskerne og uden deres stadig vaagne Interesse kan Forsøgene overhovedet ikke gennemføres med det fulde Udbytte.

Om Væksten oplyser Forsøgene følgende. Hos de 2-Aars gamle Torsk (II Gruppen) er Gennemsnitstilvæksten i 1ste Aar fra 13—16 cm med 25 og 35 cm som Maximum i henholdsvis 11 og 17 Maaneder.

Torsk paa 50—65 cm (væsentlig 3 Aar gamle) er vokset ca. 1 cm pr. Maaned i 1ste Aar, de faa større Fisk (80—90 cm) ca. 0,4—1,0 cm.

7. De 2-aarige Torsk i Nolsø-Fjord vandrer saa godt som ikke i det første Aar; flere er taget indtil 18 Maaneder efter Mærkningen paa samme Sted, hvor de blev sat i Frihed.

Ogsaa de 2- og 3-aarige Torsk, der mærkedes Øst for Nolsø og omkring Sandø er for en stor Del stationære i første Aar, medens andre, yngre og ældre Individer, er vandret mod Vest eller Syd, tildels allerede efter faa Maaneders Forløb.

Anderledes er Forholdet med de større Fisk i Foraarsforsøgene Vest og Nord for Øerne. Bestandene i disse Forsøg spredes allerede i Løbet af de første Maaneder, men samles paany i de samme Felter 1—$1^1/_2$ Aar efter, et Forhold, der antagelig staar i Forbindelse med Gydningen.

Ingen af de mærkede Torsk vides med Sikkerhed genfanget udenfor Færøernes Omraade. Eet Individ er opgivet som fanget saa langt Syd paa som i den nordlige Nordsø (59°10′N-, 3°45′Ø.). Det er imidlertid ikke lykkedes at faa denne Opgivelser bekræftet, og der er derfor ikke taget Hensyn til den i det foregaaende. Skulde det vise sig at være korrekt, er det i ethvert Tilfælde den første Meddelelse om Genfangst udenfor Færø-Omraadet af Torsk herfra.

Med een Undtagelse er alle de øvrige blevet staaende paa Kystbankerne omkring Øerne. Kun eet Individ (64 cm) mærket V. for Strømø i Maj 1927, er genfanget 3 Maaneder senere paa Færø-Banken, ca. 70 Kvartmil Vest for Suderø af en Grimsby Trawler. I 1910 mærkedes 500 store Torsk paa selve Færø-Banken, men kun 2 af disse genfangedes inde paa Kystbanken. Vi har da nu eet Eksempel paa en Vandring i modsat Retning, Rigtigheden af Opgivelsen forudsat.

Alt taler saaledes for den tidligere fremsatte Opfattelse, at Torskebestandene paa Øerne og paa Færø-Banken ganske overvejende er indbyrdes uafhængige, og derfor for største Delen er henvist til at forny sig selv. Dette stemmer ogsaa med, at Prof. Johs. Schmidt i sine Undersøgelser af den atlantiske Torsks lokale Racer (Medd. fra Carlsberg Laboratoriet 18. Bd. Nr. 6, 1930, et af de sidste Arbejder fra hans Haand) fandt, at Torsken paa Færø-Banken i sine Racekarakterer (Antal Hvirvler og Finnestraaler) er forskellig fra Bestandene inde ved selve Færøerne.

8. Hvad Forsøgene kan oplyse om Omfanget af Færingernes eget Fiskeri i Forhold til de fremmedes, er i Korthed følgende:

Ialt genfangne af Fartøjer fra

alle Forsøg i	Færøerne	England	Skotland	Norge
1923—27	432[1])	32	35	1
1909—13	1.468	157	33	0

[1]) heraf 11 med ulæselige No.

Herefter udgør de fremmedes Andel af Genfangsterne (1923—27) ca. 13,6 % mod i Forsøgene 1909—1913 11,4 %.

Tages alene Hensyn til Forsøg og Genfangst udenfor Territoritalgrænsen (3 Kvartmil) og kun til Genfangsten i Forsøgenes 1ste Aar, bliver de fremmedes Andel:

1909—13	1923—27	1923—32
ca. 25,1 %	ca. 29.6 %	ca. 41,4 %

I de enkelte Forsøg længst til Søs er de fremmedes Andel endnu større:

Færø-Banken	(1910)	ca. 52 %
Øst for Sandø	(1923)	- 46,5 %
Nord for Viderø.....	(1927)	- 61,1 % og
do.	(1932)	- 87,0 %

Fra Mærkningerne indenfor Territorialgrænsen er kun faa Genfangster gjort udenfor Grænsen i 1ste Forsøgsaar, men ogsaa i disse Tilfælde er de fremmede Fiskeres Andel stor, resp. 60,0 og 58,9 % af samtlige Genfangster.

Mærkningsforsøgene tyder saaledes paa, at Intensiteten af det fremmede Fiskeri i Forsøgsfelterne er steget fra Tiden før 1914; i Forsøgene fjernere fra Land overgaar den i de fleste Tilfælde Færingernes eget Fiskeri, iøvrigt svarende til, hvad Fiskeristatistiken oplyser.

Paa Side 30 (se ogsaa Fig. 13 samme Side) er den aarlige Torskefangst ved Øerne opført for en længere Periode.

Opgørelsen af den færøske Fangst er taget fra "Fiskeriberetningen", idet Fangsten fra Skibsfiskeriet, der er opgivet som "tørsaltet Fisk", er omregnet til hel, frisk Fisk ved Multiplikation med 2,4. Vægten af Baadfangsten, formentlig opgivet som Vægt af renset Fisk, er ligeledes omregnet til hel Vægt, men her ved et Tillæg af ca. 30 %.

Tal og Kurver illustrerer den Kendsgerning, at medens Færingernes Torskefiskeri i Hjemmefarvandene siden Krigsaarene har været ret ubetydeligt og i 1932 kun har givet ca. 4.000 Tons (imod ca. 24.000 Tons i 1919), har det britiske Fiskeri[1] siden 1920 sat ind med stor Kraft. Fangsten i 1931 og 1932 var saaledes henholdsvis ca. 35.000 og ca. 32.000 Tons Torsk.

For det engelske Fiskeris Vedkommende angives i Aars-Statistiken foruden Totalfangsten tillige Gennemsnitsfangsten pr. Dag (for Trawl- og for Line-Damperne), beregnet ved Totaludbyttet i Forhold til det Antal Dage, de samlede Damperrejser det Aar udgør. Desuden er for de senere Aar tillige Fangsten pr. 100 Timers Fiskeri anført. Begge disse Gennemsnitstal (for Torskefangsten) er ligeledes anført paa Side 30. Udbyttet har herefter ligget omkring ca. 700—900 kg pr. Rejsedag, lidt højere i 1910—1913, lidt lavere 1928—32. Dette er naturligvis kun et mangelfuldt Udtryk for Omraadets Ydeevne, men der er dog trods Svingningerne en vis Konstans over længere Perioder.

Beregnes nu Færø-Fartøjernes (d. v. s. Skibenes) Gennemsnitsfangst i Forhold til Fisketiden og det Antal Mænd, der har fisket fra det enkelte Skib, faar man et Tal for Fangsten pr. Dag pr. Mand, der i 1916—1926 ligger væsentlig højere (ca. 45—55 kg, i enkelte Aar op til 75 kg) end baade før og siden (ca. 30—40 kg i 1910—13, mindre end 30 kg i 1929—32). Fiskeriet har imidlertid i de seneste Aar været drevet af saa faa Skibe, at Grundlaget for Beregning og Sammenligning her er overmaade spinkelt. For Baadfiskeriets Vedkommende kan en tilsvarende Beregning ikke gennemføres; den samlede Fangstmængde er her steget forholdsvis stærkt i 1932 (ca. 4.200 Tons Torsk mod ca. 1.300 Tons i 1931), men udgør dog kun henved $^1/_3$ af den hidtil største Fangst (i 1918).

Alt i alt udgjorde Færingernes Fangst ved Hjemmefiskeriet (1932) knap 4.500 Tons, medens engelske og skotske Fartøjer i samme Aar landede ca. 65.000 Tons Fisk (væsentlig Torsk, Kuller og Sej) fra de færøske

[1] særlig det skotske, se Sea Fisheries Statistical Tables, London og Edinburgh.

Banker, altsaa mere end 14 Gange saa meget. Færingernes Hovedfiskeri laa derimod, som det har gjort i en Aarrække, ved Island og Grønland med en Fangst paa ca. 61.000 Tons (beregnet som fersk Fisk).

Grunden til dette mærkelige Forhold maa bl. a. søges i den forskellige Driftsform, de to Nationer anvender. Overfor det intensive britiske Damperfiskeri staar Færingernes primitive Snørefiskeri med Kutter; alle dette Brugs værdifulde Egenskaber ufortalt, har dette saa lidt som Langlinefiskeriet fra Motorbaadene større Chancer i et Felt, hvor Damperne arbejder. Hertil kommer, at Færingerne hidtil overvejende har været indstillet paa at fiske Raastof til Saltfisktilvirkningen, d. v. s. Torskefisk og helst Torsk i passende Størrelser, og af saadanne har de færøske Fiskeskibe erfaringsmæssigt i kortere Tid kunnet fiske Last ved Island og Grønland Foraar og Sommer igennem, end Tilfældet synes at have været i de hjemlige Farvande.

Et begyndende Snurrevaadsfiskeri og en voksende Interesse for Produktion og Omsætning bl. a. af Fiskevarer, der kan afsættes i frisk Tilstand, maa efterhaanden hidføre en delvis Omlægning af Driften og dermed give Hjemmefiskeriet større Værdi for Øerne selv.

9. Der mangler endnu meget i, at den færøske Torsks Biologi er fuldtud forstaaet, men de systematiske Undersøgelser af Bestanden, der i de sidste Aar er organiseret med beredvillig Bistand af de færøske Autoriteter, er et vigtigt Skridt fremad.

Som Led i disse Arbejder bør der i en Aarrække gennemføres Mærkninger af de større Fisk paa Kystbankerne i Foraarstiden (om muligt mindst 500 Stk. aarlig).

Vi kan ikke slutte uden at takke alle dem, der har vist Sagen Interesse og ved at samle Oplysninger om Genfangsterne har ydet uundværlig Hjælp. En særlig Tak rettes til Færø Amt, til d'Hrr. Sysselmænd og Vragerkontrollører samt til nedennævnte Herrer for deres Bistand ved Forsøgenes Gennemførelse:

Hr. Navigationslærer John Christiansen, Thorshavn, Hr. Prokurist Anton Degn, Hr. Købmand M. Hansen, Nolsø, Hr. Købmand I. M. Poulsen, Hr. Købmand Niclas Niclasson samt Hr. Købmand Magnus Dahl, Vaag.

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» 3 Johan Hjort og C. G. Joh. Petersen: Kort Oversigt over de internationale Fiskeriundersøgelsers Resultater med særligt Henblik paa norske og danske Forhold. 10 Tavler. 1905. 54 S. Kr. 3.50.

» 4 Martin Knudsen, C. G. Joh. Petersen, C. F. Drechsel, C. H. Ostenfeld: De internationale Havundersøgelser 1902—07. 1908. 28 S. Kr. 0.75.

» 5 Bjarni Sæmundsson: Oversigt over Islands Fiske med Oplysning om deres Forekomst, vigtigste biologiske Forhold og økonomiske Betydning. 1 Kort. 1909. 140 S. Kr. 2.25.

Nr. 6 Andreas Otterstrøm: Sildens Afhængighed af forskellige hydrografiske og meteorologiske Forhold i Store Bælt. 2 Textfigurer. 1910. 52 S. Kr. 1.00.

» 7 A. C. Johansen: Om Rødspætten og Rødspættefiskeriet i Beltfarvandet med nogle Bemærkninger om de øvrige Flynderarter og Flynderfiskerier i samme Farvand. 23 Tavler, 14 Textfigurer. 1912. 158 Sider. Kr. 3.00.

» 8 Johs. Schmidt: Danske Undersøgelser i Atlanterhavet og Middelhavet over Ferskvandsaalens Biologi. 3 Tavler, 5 Textfigurer. 1912. 33 Sider. Kr. 1.50.

» 9 A. C. Johansen og J. Chr. Løfting: Om Fiskebestanden og Fiskeriet i Gudenaaens nedre Løb og Randers Fjord. — With an English Resumé. 4 Tavler. 42 Textfigurer. 1919. 169 Sider. Kr. 3.75.

»10 Erik M. Poulsen: Om Hummeren og Hummerfiskeriet i de danske Farvande. 6 Textfigurer. 1927. 42 Sider. Kr. 1.00.

The name: »Kommissionen for Havundersøgelser« has from the 1st of September 1926 been changed to: »Kommissionen for Danmarks Fiskeri- og Havundersøgelser«.