

TAGGING OF SAITHE ON THE NORWEGIAN COAST IN 1978-1980

by

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ABSTRACT

Continuing a series of tagging experiments covering most of the Norwegian coast each year since 1972, 15 038 saithe were tagged in inshore localities in 1978-1980. In addition, 1494 saithe caught by trawl were tagged on the coastal banks at about 63°N in 1980. The results generally confirm the migration pattern from the earlier experiments. There is some evidence of migration from the coastal banks to more shallow waters, which is opposite to the general direction.

INTRODUCTION

From 1954 to 1982, saithe tagging was carried out each year on the Norwegian coast. Results from the experiments 1954-1964 have been reported by Olsen (1959a, b, 1961) and Anon. (1965). Before 1972, most of the tagging was carried out in northern Norway, but in the period 1972-1980, the experiments were extended to cover the whole coast north of 59°N. Results of the tagging experiments 1970-1977 have been presented by Jakobsen (1978a, b, c, 1981). In this paper, results of the tagging experiments 1978-1980 are presented. In addition to the usual tagging of young saithe caught by purse seine in inshore areas, saithe caught by trawl were tagged on the coastal banks at about 63°N.

MATERIAL AND METHODS

Details of the saithe tagging experiments 1978-1980 are given in Table 1. A total of 15 038 saithe were tagged in inshore localities, 7100 in 1978, 4638 in 1979, and 3300 in 1980. The saithe were from commercial purse seine catches, except for one catch taken by hand line. In each experiment between 400 and 601 saithe were tagged. The areas of release were scattered along the whole Norwegian coast north of 59°N. The tagged saithe were predominantly immature 2-4 year old fish. In 1980, 1494 saithe from nine trawl hauls on the coastal banks at about 63°N were also tagged. The size was mostly 38-49 cm and the dominating age group was 3 years. In all the experiments hydrostatical tags of Lea's type were used, fastened to the fish with a gut in front of the anterior dorsal fin.

The data include all recaptures reported up to 1984. Of the 2124 recaptures, 40 were tagged in the trawl experiments.

RESULTS

The geographical distribution of the recaptures from each experiment is shown in Figs 1-29. In many of the experiments a significant number of the recaptures had to be omitted from the figures because of inadequate or no information about the locality. However, most of these appear to have been caught near the tagging locality.

Tagging experiments in 1978

Typically, the recaptures from the experiments south of 62°N in May-June are distributed both north and south of the tagging localities (Figs 1-3). Compared to the experiments 1972-1977 (Jakobsen 1978a, 1981), the preference to move south appear to be less pronounced. However, the large changes in the saithe fisheries in the North Sea after 1976 in all probability have had an effect on the distribution of the recaptures, and it is therefore difficult to draw firm conclusions about changes in the migration pattern.

The results of experiments between 63°N and 68°N are shown in Figs 4-6. The two northernmost of these experiments show patterns similar to the earlier experiments (Jakobsen 1978b, 1981), whereas the southernmost experiment (Fig. 4) is atypical in showing evidence only of short range migration.

The experiments north of 68°N (Figs 7-10) also show a distribution of recaptures similar to the earlier experiments (Jakobsen 1978c, 1981). The relatively few examples of long range migrations in Fig. 8 are probably due to the fact that the fish tagged in this experiment were generally smaller than in the other experiments and therefore likely to stay longer in the tagging area.

Tagging was also carried out in three localities south of 62°N in December (Figs 11-13). The distribution of the recaptures are not significantly different from the May-June experiments.

Tagging experiments in 1979

The experiments in 1979 (Figs 14-21) gave results which did not differ very much from those in 1978. Worth noting is the concentration of recaptures in the Shetland area from the experiment at $70^{\circ}08'\text{N}$ (Fig. 20). Recaptures from this area was reported each year from 1980 to 1984.

Tagging experiments in 1980

The experiments in 1980 on the whole gave few recaptures. Especially the purse seine (and hand line) experiments south of 69°N gave unusually low recovery rates, 2-5 per cent, and there is no readily apparent explanation for this. A low rate of recovery, 2.7 per cent, was also found in the trawl experiments, but this was to be expected since the fish were caught at much larger depths (about 150 m) and therefore less likely to survive the tagging.

The purse seine and hand line experiments show distributions of recaptures similar to those in 1978 and 1979 (Figs 22-28). The trawl experiments represent the largest number of saithe from trawl catches tagged in Norwegian waters (Fig. 29). The distribution of the recaptures is similar to the usual from purse seine experiments in the area, but in addition there is evidence of a significant migration from the coastal banks to more inshore areas which is opposite to the general direction of migration.

DISCUSSION

The tagging experiments in 1978-1980 give no evidence of major changes from the migration pattern shown by the experiments in 1972-1977. There is still a significant migration of young saithe from the area north of 62°N to the North Sea and there is also some migration from the west coast to areas north of 62°N. Part of the spawning migration from northern Norway extends into the North Sea.

The evidence of migration from the coastal banks to inshore areas means that the saithe contrary to what the purse seine experiments have indicated, may be caught by purse seine also after they have been exposed to trawlers. The exploitation of saithe in the trawl fishery will therefore have some effect on the purse seine fishery. However, the effect must be relatively small because there is evidently a clear tendency for the saithe to move away from the coast when a certain size has been reached, and this is reflected in the generally larger size of saithe on the banks than in more coastal areas.

REFERENCES

- Anon. 1965. Report of the Coalfish Working Group. Co-op. Res. Rep. int. Coun. Explor. Sea, Ser. A, 6: 1-23.
- Jakobsen, T. 1978a. Saithe tagging experiments on the Norwegian west coast south of 62°N, 1972-74. Coun. Meet. int. Coun. Explor. Sea, 1978 (G:32): 1-13.
- Jakobsen, T. 1978b. Saithe tagging experiments on the Norwegian coast between 62°N and 67°N, 1971-74. Coun. Meet. int. Coun. Explor. Sea, 1978 (G:33): 1-9.
- Jakobsen, T. 1978c. Saithe tagging experiments in northern Norway north of 68°N, 1970-74. Coun. Meet. int. Coun. Explor. Sea, 1978 (G:34): 1-14.
- Jakobsen, T. 1981. Preliminary results of saithe tagging experiments on the Norwegian coast 1975-77. Coun. Meet. int. Coun. Explor. Sea, 1981 (G:35): 1-6, 1 table, 18 figs.
- Olsen, S. 1959a. Migration of coalfish (*Gadus virens* L.) from Norway to Faroe Islands and Iceland. Coun. Meet. int. Coun. Explor. Sea, 1959 (12): 1-5.
- Olsen, S. 1959b. Preliminary results of the Norwegian coalfish taggings 1954-58. Coun. Meet. int. Coun. Explor. Sea, 1959 (114): 1-7.
- Olsen, S. 1961. An account of the Norwegian coalfish investigations with special reference to the tagging experiments. Coun. Meet. int. Coun. Explor. Sea, 1961 (125): 1-8.

Table 1. Saithe tagging experiments on the Norwegian coast 1978-1980.

Date	Position	Gear	Nos released	Size range (cm)	Recaptures									Per cent	
					78	79	80	81	82	83	84	?	Total		
30.5.78	N59 ⁰ 04	E05 ⁰ 26	P.seine	600	31-46	36	32	15	1	1	-	-	-	85	14
31.5.78	N59 ⁰ 53	E05 ⁰ 05	"	599	33-43	38	32	13	5	2	-	1	-	91	15
1.6.78	N61 ⁰ 17	E04 ⁰ 38	"	601	29-44	53	20	11	2	4	-	-	-	90	15
14.6.78	N63 ⁰ 04	E07 ⁰ 34	"	600	29-44	50	22	12	2	-	-	-	-	86	14
7.6.78	N64 ⁰ 20	E10 ⁰ 28	"	600	35-49	39	44	13	2	2	1	-	-	101	17
9.6.78	N67 ⁰ 18	E13 ⁰ 43	"	600	33-49	45	38	15	2	4	2	1	2	109	18
2.8.78	N68 ⁰ 49	E16 ⁰ 06	"	500	32-56	63	41	14	7	2	3	1	1	132	26
22.8.78	N70 ⁰ 46	E23 ⁰ 23	"	500	30-63	38	27	1	3	-	1	-	6	76	15
10.8.78	N70 ⁰ 53	E28 ⁰ 25	"	475	43-78	12	35	12	4	1	-	1	1	66	14
11.8.78	N70 ⁰ 04	E30 ⁰ 04	"	525	35-69	11	29	41	2	-	-	-	1	84	16
13.12.78	N59 ⁰ 49	E05 ⁰ 05	"	500	31-46	11	87	18	8	2	1	-	2	129	26
16.12.78	N61 ⁰ 02	E04 ⁰ 31	"	500	29-44	-	22	13	1	3	1	-	-	40	8
12.12.78	N61 ⁰ 59	E05 ⁰ 11	"	500	28-42	1	106	10	3	3	1	-	11	135	27
28.8.79	N60 ⁰ 00	E05 ⁰ 28	P.seine	439	28-50		10	29	20	5	1	-	-	65	15
29.8.79	N61 ⁰ 17	E04 ⁰ 38	"	599	31-41		-	22	3	5	-	-	-	30	5
3.9.79	N62 ⁰ 59	E07 ⁰ 52	"	600	31-49		22	43	24	11	4	-	1	105	18
7.9.79	N65 ⁰ 46	E12 ⁰ 16	"	600	27-57		10	19	2	2	4	-	1	38	6
10.9.79	N67 ⁰ 40	E14 ⁰ 44	"	600	35-51		4	60	37	13	4	2	-	120	20
12.9.79	N68 ⁰ 41	E14 ⁰ 25	"	600	35-56		3	17	4	2	2	-	1	29	5
25.9.79	N70 ⁰ 08	E19 ⁰ 59	"	600	46-73		16	41	27	9	8	5	5	111	19
20.9.79	N70 ⁰ 57	E25 ⁰ 37	"	600	38-60		119	45	3	1	-	1	2	171	29
4.8.80	N60 ⁰ 20	E05 ⁰ 11	P.seine	500	27-35			4	13	1	1	-	-	19	4
5.8.80	N60 ⁰ 57	E04 ⁰ 49	H.line	500	30-39			2	3	3	1	-	-	9	2
12.8.80	N64 ⁰ 20	E10 ⁰ 26	P.seine	500	29-50			8	13	3	2	1	-	27	5
14.8.80	N67 ⁰ 43	E14 ⁰ 30	"	500	30-54			-	3	3	-	3	-	9	2
18.8.80	N68 ⁰ 50	E16 ⁰ 21	"	400	45-65			-	7	5	2	-	-	14	4
22.8.80	N70 ⁰ 08	E19 ⁰ 59	"	500	35-65			11	31	15	4	1	-	62	12
26.8.80	N71 ⁰ 06	E25 ⁰ 28	"	400	47-74			15	17	9	8	2	-	51	13
24.6.80	N62 ⁰ 51	E05 ⁰ 30	B.trawl	81	32-82			-	-	1	-	-	-	1	1
25.6.80	N63 ⁰ 01	E05 ⁰ 29	"	115	29-56			1	-	-	2	-	-	3	3
25.6.80	N62 ⁰ 53	E05 ⁰ 33	"	245	32-57			5	7	1	-	-	-	13	5
27.6.80	N62 ⁰ 53	E05 ⁰ 30	"	54	30-58			-	-	-	1	-	-	1	2
27.6.80	N63 ⁰ 02	E05 ⁰ 27	"	40	32-64			-	1	1	-	1	-	3	8
1.7.80	N63 ⁰ 18	E06 ⁰ 36	"	79	36-76			2	1	-	-	-	-	3	4
1.7.80	N63 ⁰ 12	E06 ⁰ 54	"	338	35-63			1	1	1	-	1	-	4	1
1.7.80	N63 ⁰ 10	E06 ⁰ 53	"	142	31-65			1	1	-	-	-	-	2	1
3.7.80	N62 ⁰ 46	E05 ⁰ 25	"	100	32-57			-	2	-	-	-	-	2	2
3.7.80	N62 ⁰ 53	E05 ⁰ 35	"	200	31-53			1	4	1	-	-	-	6	3
3.7.80	N62 ⁰ 54	E05 ⁰ 34	"	100	30-53			1	1	-	-	-	-	2	2

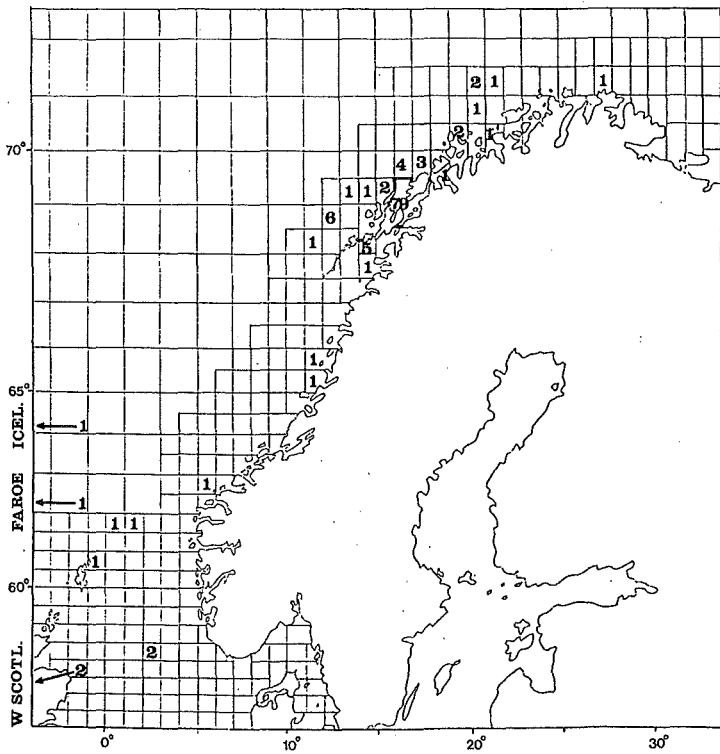


Figure 7. Recaptures from tagging 2.8.78. 500 saithe released inside bordered area.

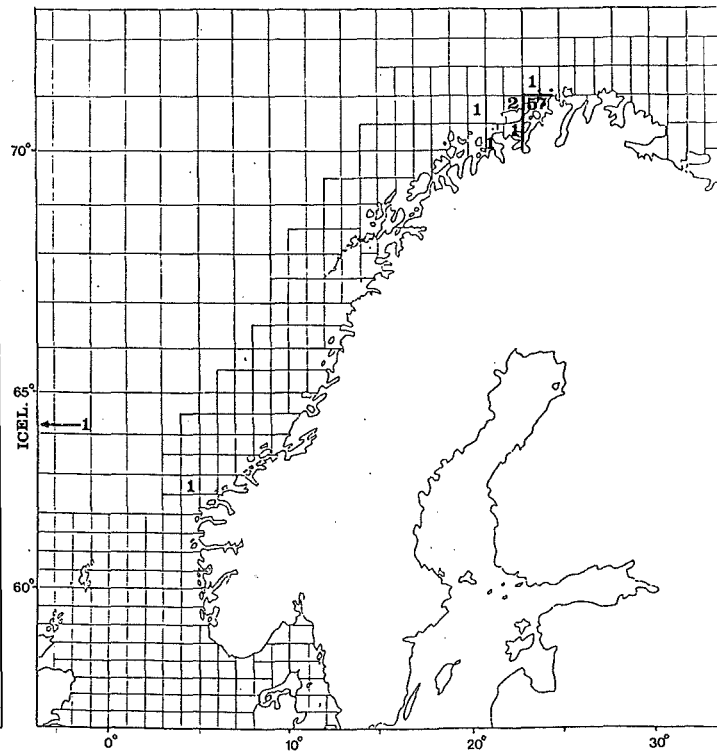


Figure 8. Recaptures from tagging 22.8.78. 500 saithe released inside bordered area.

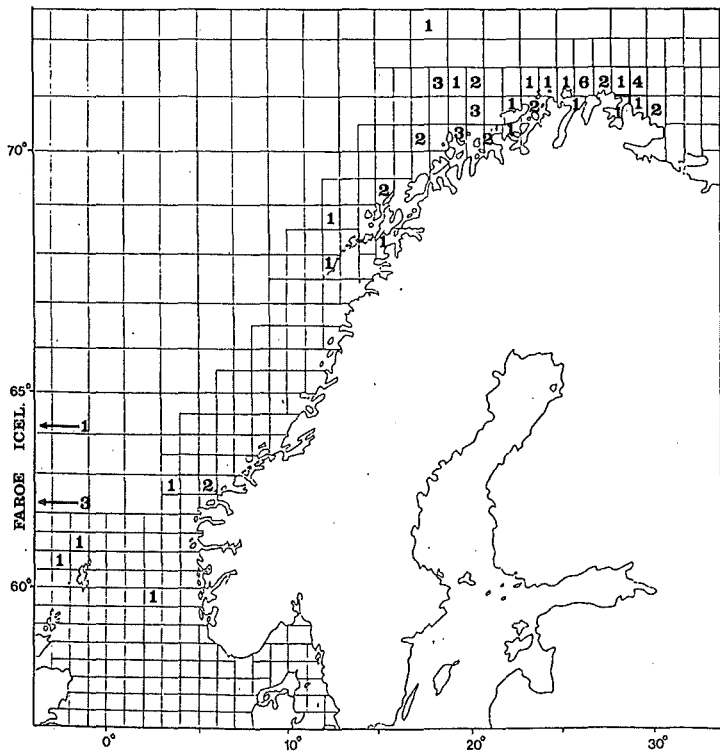


Figure 9. Recaptures from tagging 10.8.78. 475 saithe released inside bordered area.

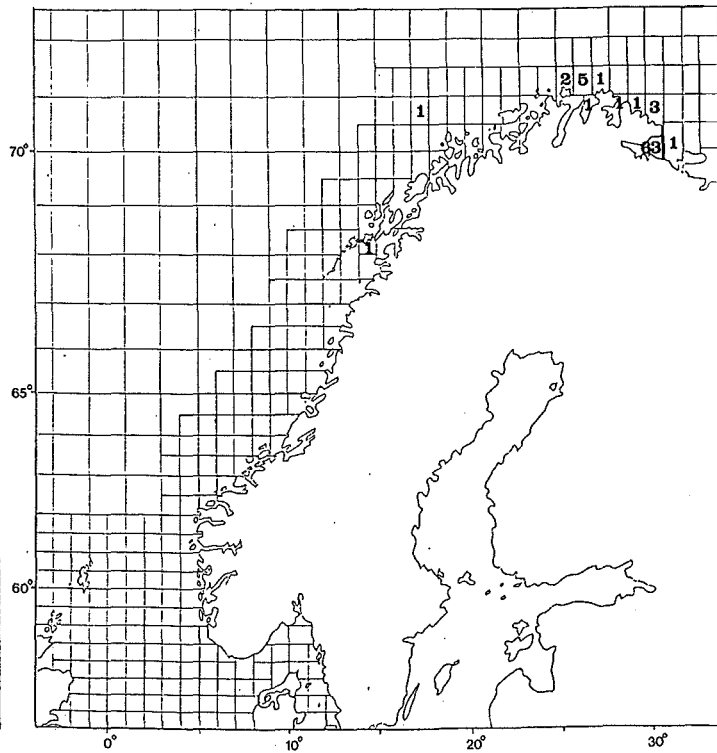


Figure 10. Recaptures from tagging 11.8.78. 525 saithe released inside bordered area.

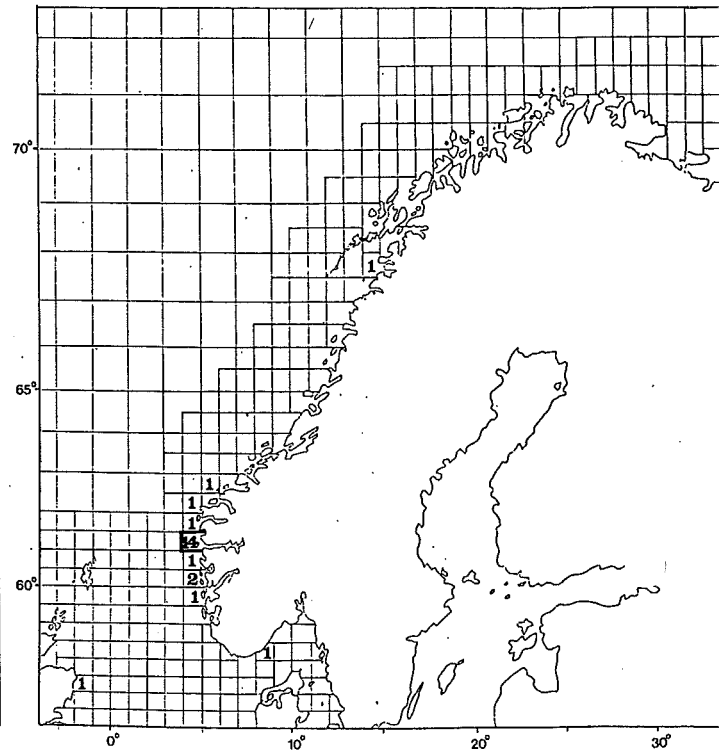
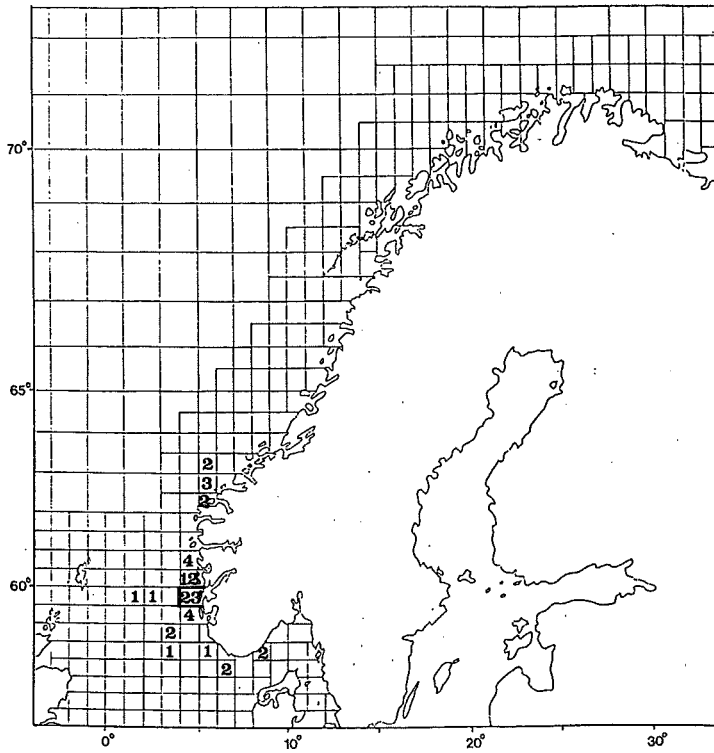


Figure 11. Recaptures from tagging 13.12.78. 500 saithe released inside bordered area.

Figure 12. Recaptures from tagging 16.12.78. 500 saithe released inside bordered area.

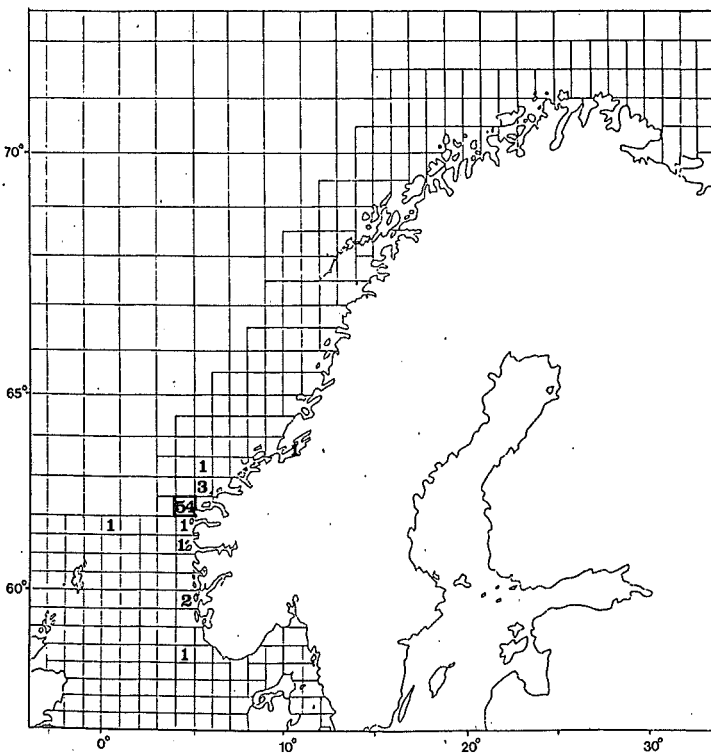


Figure 13. Recaptures from tagging 12.12.78. 500 saithe released inside bordered area.

