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PRELIMINARY RESULTS OF SAITHE TAGGING EXPERIMENTS ON
THE NORWEGIAN COAST IN 1973

by

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INTRODUCTION

The Norwegian saithe tagging experiments carried out on the Norwegian west coast south of 62°N in 1972 were the first of any significance in that area. Preliminary results were presented last year (Jakobsen 1975) showing an extensive migration of immature saithe into the North Sea.

From the coastal area between 62°N and Lofoten results of Norwegian experiments carried out in the Møre (Svinøy) area (62° - $63^{\circ}30'\text{N}$) have been published (Olsen 1959, Anon. 1965), indicating a basically northward trend in the migration pattern although a few recaptures were also made in the North Sea. This substantiates the common opinion (Anon. 1965) that the borderline between the North Sea and the North-East Arctic stocks of saithe is most conveniently set at 62°N .

However, three tagging experiments at Møre in 1971 and 1972, which unfortunately produced very few recaptures (Jakobsen 1976), gave slight indications that the migration of immature saithe from the area might be more frequently directed towards the North Sea than previously suspected.

In June 1973 five saithe tagging experiments were carried out on the Norwegian west coast, two of these north of 62°N . This paper deals with the results up to and including 1975.

MATERIAL AND METHODS

In 1973 saithe tagging was carried out at five localities on the west coast of Norway. Hydrostatical tags of Lea's type were used, fastened to the fish with a nylon gut through the flesh in front of the anterior dorsal fin. The release data were: 13 June, $59^{\circ}27'N$ - $5^{\circ}05'E$, 600 saithe, 31 - 51 cm. 12 June, $59^{\circ}59'N$ - $5^{\circ}05'E$, 300 saithe, 24 - 40 cm. 7 June, $61^{\circ}56'N$ - $5^{\circ}07'E$, 600 saithe, 32 - 54 cm. 5 June, $63^{\circ}29'N$ - $8^{\circ}00'E$, 600 saithe, 32 - 51 cm. 4 June, $64^{\circ}20'N$ - $10^{\circ}26'E$, 600 saithe, 36 - 52 cm.

The tagged saithe were predominantly 2 - 4 years old and accordingly most of the recaptures made by 1975 were immature fish. The saithe had been caught by purse or beach seine and had been kept in a net for a few days.

RESULTS

Fig. 1 - 5 show the geographical distribution of the recaptures in 1973 - 75 for which the locality was reported. Tag returns without locality or position are omitted. They generally amount to less than ten per cent of the total number of tags returned.

The figures show the recoveries made during the first two and a half year after release and may give the impression that some of the tagged fish still remain near the tagging localities. However, as was clearly demonstrated in the more detailed presentation of the 1972 tagging experiments (Jakobsen 1975, 1976), much of the saithe migrate away from the coast already during the first year after tagging and recaptures near the tagging localities after two years are very few if any.

The three experiments south of $62^{\circ}N$ (Figs 1 - 3) all show a basic migration pattern towards the North Sea from where 69 recoveries were made (including Skagerrak). Eleven recoveries were made just

north of 63°N and three tags were returned from northern Norway. In addition, there were three returns from the Faroe Islands and one from Iceland.

The experiment at Møre (Fig. 4) indicate that the immature saithe from that area also basically migrate to the North Sea. Thus, of the recaptures outside the release area, only 12.5 per cent were made to the north. The recoveries from the North Sea were more concentrated in the northern part than those from the experiments south of 62°N .

From the northernmost experiment, at Trøndelag (Fig. 5), there were seven recoveries north of $66^{\circ}30'\text{N}$ and six from the North Sea. Most of the recoveries on the Norwegian coast near the release area were to the south.

There have been reported seven recoveries near the Faroe Islands and two at Iceland from these experiments. This demonstrates what is known from earlier tagging experiments (Anon. 1965), that there is some degree of mixing between the different saithe stocks.

DISCUSSION

The recoveries will be influenced by the fishing intensity in the different areas. For saithe, however, the exploitation is fairly equally distributed on the different stocks (Anon. 1976) and with the exception of local variations, especially along the Norwegian coast, the recoveries should give a useful picture of the migration patterns, also with regard to quantity.

The tagging experiments have so far given little direct information about what spawning grounds the immature saithe from the different parts of the Norwegian west coast finally migrate to. However, it would seem natural that immature saithe once having migrated to the North Sea also will prefer chiefly the North Sea spawning grounds.

If this assumption is correct, there is at present obviously a high degree of recruitment to the North Sea stock also from the areas north of 62°N . From the Møre area (Fig. 4) it seems that a clear majority of the saithe migrate to the North Sea, whereas from Trøndelag (Fig. 5) the numbers of saithe migrating to the south and north respectively seem to be about equal. Thus, the coastal area around 64°N appears to be approximately the middle of a mixing zone between the two stocks as far as recruitment to the spawning stocks is concerned. The extension of this mixing zone is largely a question of definition since some degree of mixing seems to occur all along the coast.

The tagging experiments on immature saithe carried out at Møre in 1955 - 58 indicated a basically northward migration, although a few recoveries were also made in the North Sea (Olsen 1959, Anon. 1965). Accordingly, the migration pattern of the saithe at Møre have changed during the last 15 years. At present, the borderline between the North Sea and North-East Arctic stocks at 62°N is set too far south as far as immature saithe is concerned and 64°N seems to be more suitable. However, the Møre shelf at about 63°N is one of the major spawning grounds for the North-East Arctic stock and it is not possible to fully divide the stocks geographically. Besides, the border area between the stocks is apparently unstable and it seems recommendable that routine tagging experiments should be carried out to keep a continuous record of the recruiting migrations to the two stocks from the Norwegian coast.

SUMMARY

In June 1973, 2 700 young saithe were tagged on the Norwegian west coast. Of these, 1 200 were tagged north of 62°N which is the commonly set borderline between the North Sea and North-East Arctic stocks of saithe.

The saithe tagged south of 62°N mostly migrated out into the North Sea.

The saithe tagged north of 62°N were also to a large extent recaptured in the North Sea, although some also migrated northwards.

The results indicate that the borderline at 62°N is at present too far south as far as the recruitment of immature saithe to the spawning stocks is concerned. However, the border area between the stocks is apparently unstable.

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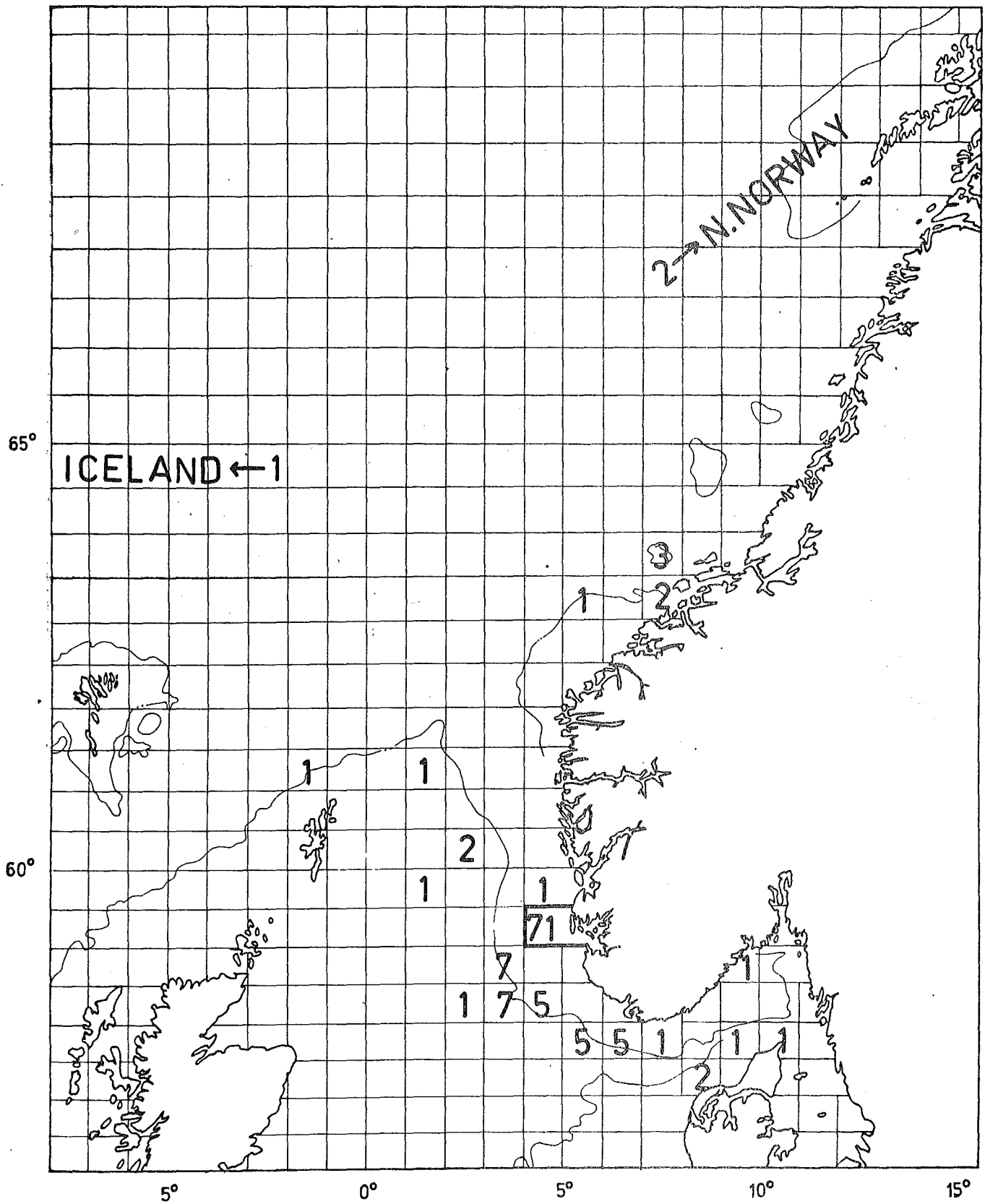


Fig. 1. Tagging experiment on saithe 13 June 1973. Recoveries 1973-75. (Release area indicated by thick borderline).

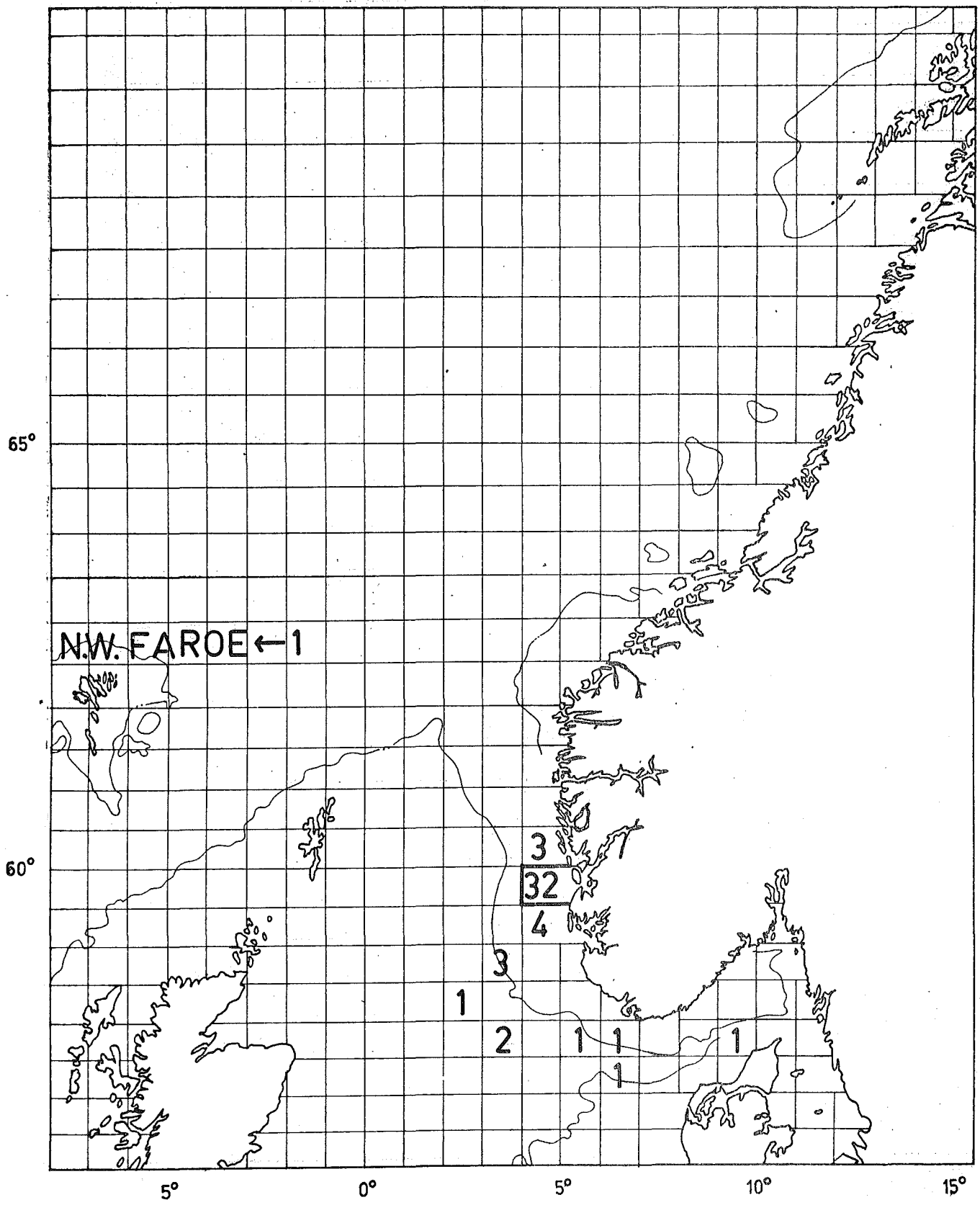


Fig. 2. Tagging experiment on saithe 12 June 1973. Recoveries 1973-75. (Release area indicated by thick borderline).

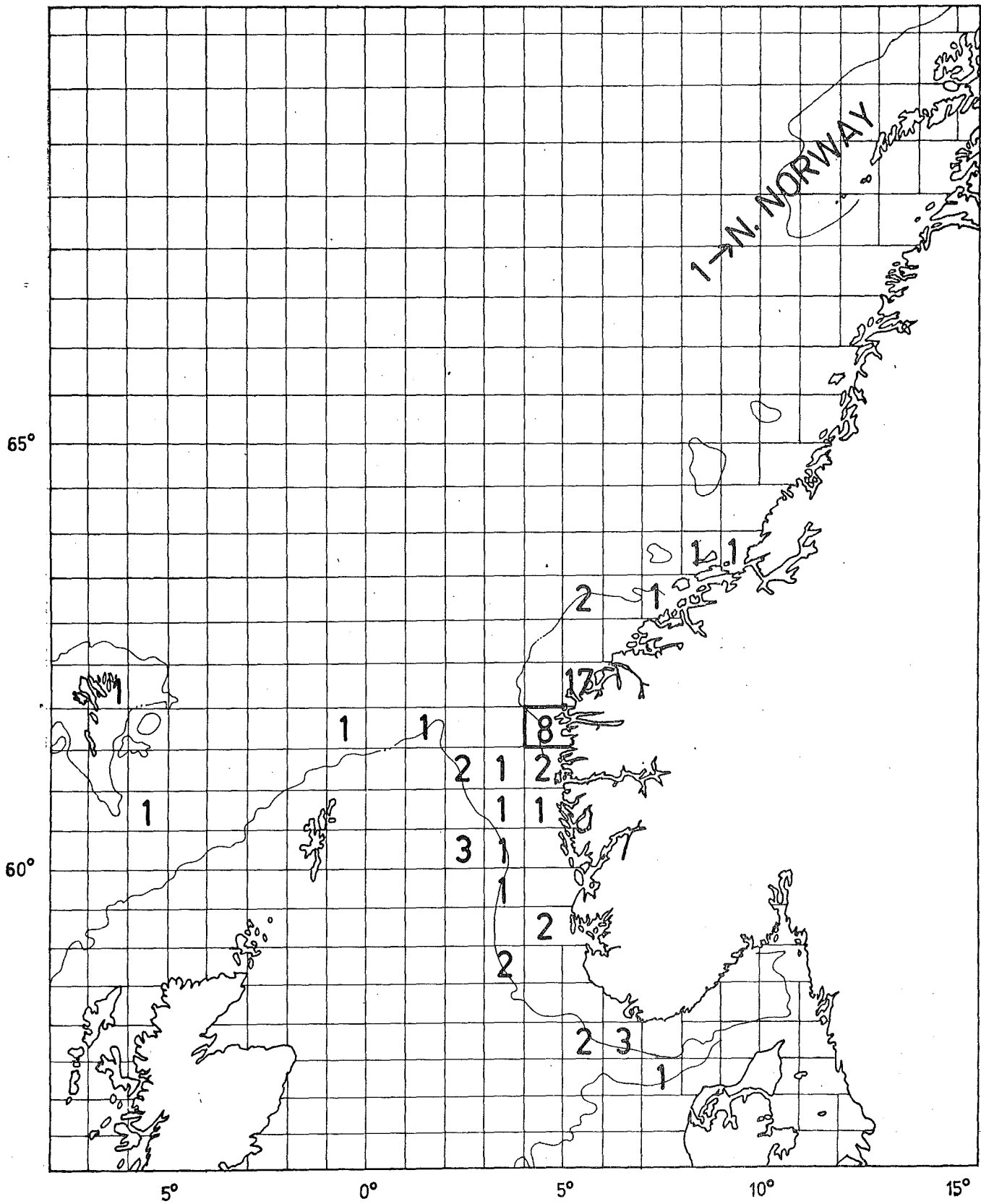


Fig. 3. Tagging experiment on saithe 7 June 1973. Recoveries 1973-75. (Release area indicated by thick borderline).

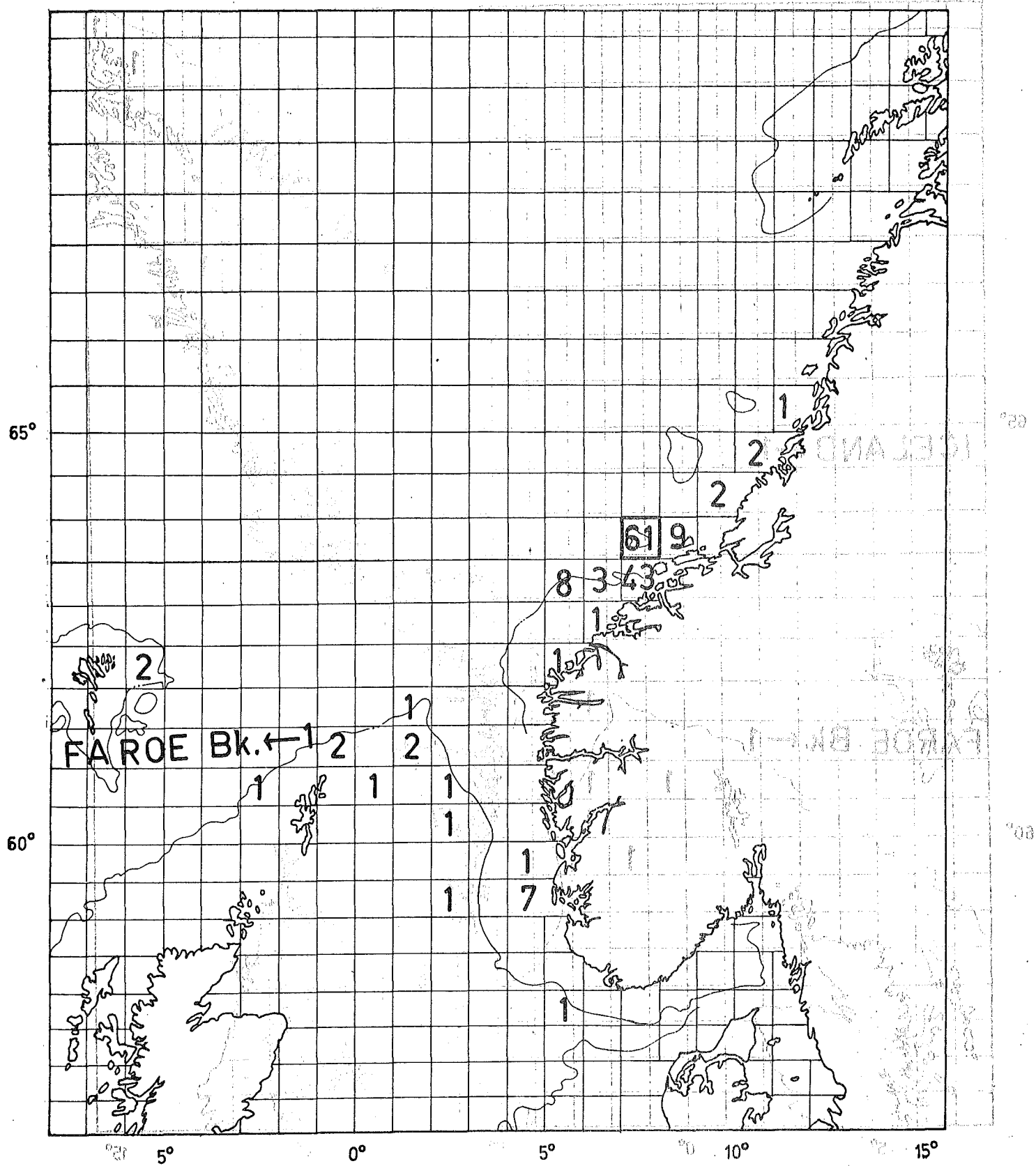


Fig. 4. Tagging experiment on saithe 5 June 1973. Recoveries (1973-75). (Release area indicated by thick borderline).

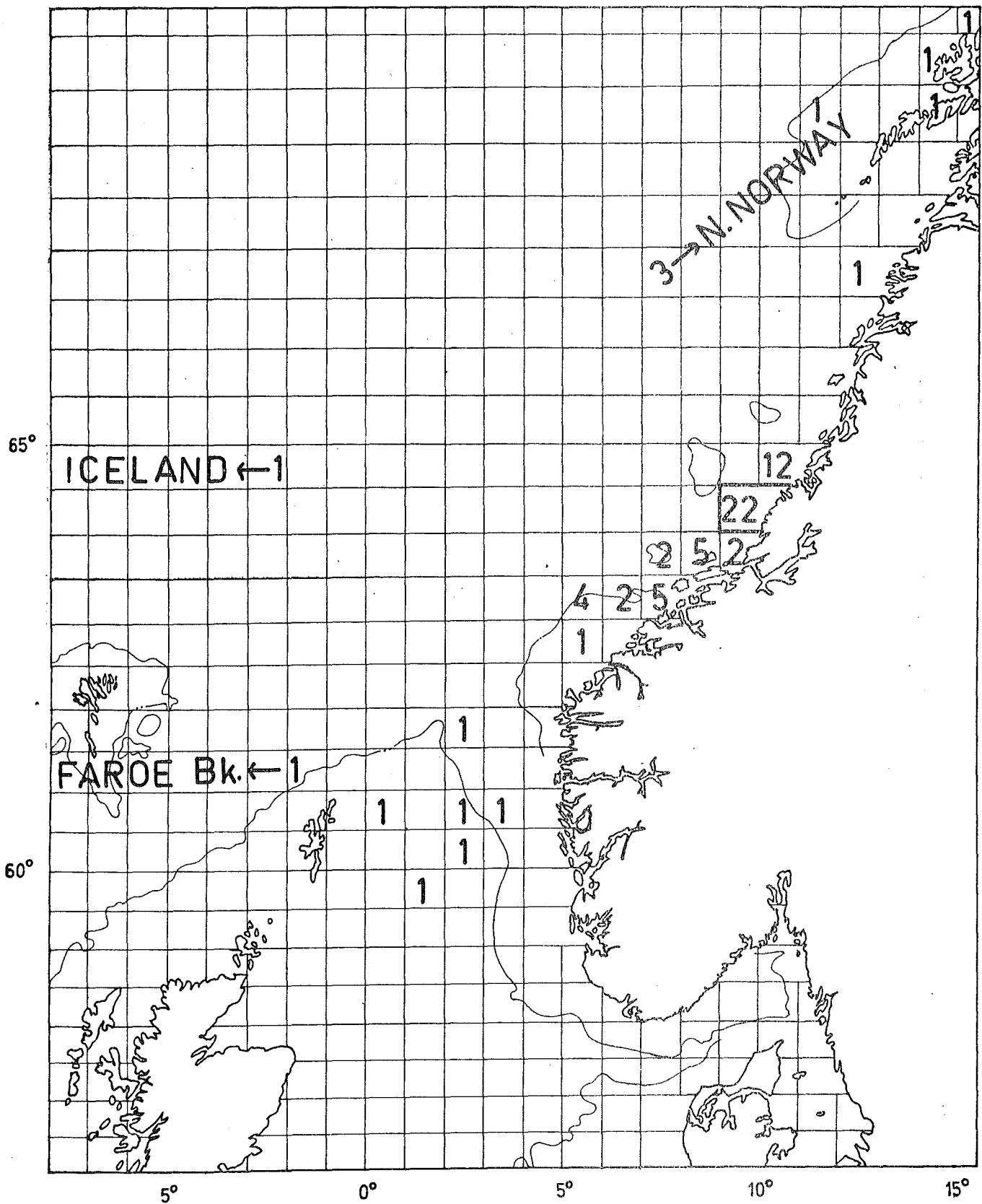


Fig. 5. Tagging experiment on saithe 4 June 1973. Recoveries 1973-75. (Release area indicated by thick borderline).